



WIFI NETWORK

Name: freethescience

Password: openaccess

233rd ECS Meeting

May 13-17, 2018

Seattle Sheraton and Washington State Convention Center



SEATTLE • WA

Meeting Program



#FREE THE SCIENCE™

**Advancing solid state & electrochemical science
and technology since 1902**



ECS Leadership

ECS Officers

Johna Leddy, *President*
Yue Kuo, *Sr. Vice President*
Christina Bock, *2nd Vice President*
Stefan De Gendt, *3rd Vice President*
James Fenton, *Secretary*
E. Jennings Taylor, *Treasurer*
Roque Calvo, *Executive Director*

Board of Directors

Christina Bock, *2nd Vice President*
Stanko Brankovic, *Chair, Electrodeposition Division*
Mikhail Brik, *Chair, Luminescence & Display Materials Division*
Roque Calvo, *Executive Director*
Graham Cheek, *Chair, Organic & Biological Electrochemistry Division*
Stefan De Gendt, *3rd Vice President*
James Fenton, *Secretary*
Andy Herring, *Chair, Energy Technology Division*
Greg Jackson, *Chair, High Temperature Materials Division*
Christopher Johnson, *Chair, Battery Division*
Yue Kuo, *Sr. Vice President*
Johna Leddy, *President*
Yaw Obeng, *Chair, Dielectric Science & Technology Division*
Colm O'Dwyer, *Chair, Electronics & Photonics Division*
Krishnan Rajeshwar, *Past President*
Douglas Riemer, *Chair, Industrial & Electrochemical Engineering Division*
Slava Rotkin, *Chair, Nanocarbons Division*
Alice Suroviec, *Chair, Physical & Analytical Electrochemistry Division*
Stuart Swirson, *Nonprofit Financial Professional*
E. Jennings Taylor, *Treasurer*
Sannakaisa Virtanen, *Chair, Corrosion Division*
Eric Wachsman, *Chair, Interdisciplinary Science & Technology Subcommittee*
Nianqiang Wu, *Chair, Sensor Division*

ECS Senior Management Staff

Roque Calvo, *Executive Director/Chief Executive Officer*
Tim Gamberzky, *Chief Operating Officer*
Mary Yess, *Chief Content Officer*

ECS Staff

Dinia Agrawala, *Graphic Designer/Print Production Manager*
Casey Annunziata, *Meetings Specialist*
Marcelle Austin, *Board Relations Specialist*
Linda Cannon, *Staff Accountant*
Karen Chmielewski, *Finance Associate*
Paul Cooper, *Editorial Manager*
Beth Craanen, *Director of Publications*
Rob Gerth, *Director of Marketing & Communications*
Annie Goedkoop, *Associate Director of Publications/Interface Managing Editor*
Paul Grote, *Director of Finance*
Andrea Guenzel, *Publications Specialist*
Mary Hojlo, *Membership & Constituent Services Specialist*
Bianca Kovalenko, *Meetings Program Specialist*
John Lewis, *Director of Meetings and Corporate Programs*
Ashley Moran, *Corporate Programs Manager*
Winnie Mutch, *Web Manager*
Anna Olsen, *Senior Content Specialist & Library Liaison*
Shannon Reed, *Director of Membership Services*
Andrew Ryan, *Publications Specialist*
Beth Schademann, *Publications Specialist*
Logan Streu, *Publications Content Manager*
Jessica Wisniewski, *Human Resources and Operations Manager*

ECS Editors

Journal of The Electrochemical Society (JES)

Robert Savinell, *Editor*
Doron Aurbach, *Technical Editor*
David Cliffler, *Technical Editor*
Gerald S. Frankel, *Technical Editor*
Thomas F. Fuller, *Technical Editor*
Charles L. Hussey, *Technical Editor*
Janine Mauzeroll, *Technical Editor*
Rangachary Mukundan, *Technical Editor*
Venkat Subramanian, *Technical Editor*

ECS Journal of Solid State Science and Technology (JSS)

Dennis Hess, *Editor*
Jennifer A. Bardwell, *Technical Editor*
Francis D'Souza, *Technical Editor*
Peter Mascher, *Technical Editor*
Kailash C. Mishra, *Technical Editor*
Fan Ren, *Technical Editor*

Interface

Krishnan Rajeshwar, *Editor*

ECS Transactions (ECST)

Jeffrey W. Fergus, *Editor*

www.electrochem.org



All recycled paper. Printed in USA.



233rd ECS Meeting SEATTLE, WA

May
13-17,
2018

Seattle Sheraton and Washington State Convention Center

ECS Welcomes You to Seattle



Johna Leddy
Johna Leddy
ECS President

On behalf of the board of directors, volunteer leadership, and ECS staff, it is my pleasure to welcome you to the 233rd ECS Meeting.

With the meeting being held at the Washington State Convention Center in the heart of downtown Seattle, attendees can easily access the many attractions the city has to offer. We hope your time in the Emerald City will give you the chance to network with colleagues, discuss important research, and discover new opportunities for collaboration. Please join us for the **opening reception** on Sunday in the 4th Floor Atrium Lobby at 1900h to kick off this exciting week.

You won't want to miss the **plenary session** on Monday, May 14 in Ballroom 6E, where we will welcome all attendees and wrap up the first full meeting day with the **ECS Lecture**, "Linking Brains to Machines: From Basic Science to Neurological Neurorehabilitation," by Miguel Nicolelis. We will also be recognizing the Society award recipients, Hariklia (Lili) Deligianni and Ralph White, receiving the Vittorio de Nora Award and the Henry B. Linford Award for Distinguished Teaching, respectively. Be sure to attend the many ECS Division Award talks in various symposia throughout the week. We'll also be honoring Roque Calvo at this, his last biannual meeting. He hasn't missed a meeting in 37 years.

In addition to the over 2,600 technical presentations, we encourage you to take advantage of our educational **short courses**, which are being offered on Sunday, May 13. Students and young professionals should also attend our **professional development workshops**, which will be held throughout the meeting week. Here, you can gain essential information on enhancing career opportunities, resume building, and networking. Stop by the exhibit hall for the **Career Expo**, where you can get a new professional portrait and also meet with potential employers.

Of course, don't forget to visit the **exhibit hall** to learn more about our exciting lineup of industry leading exhibitors and mingle with colleagues. The **poster sessions** on Monday, Tuesday, and Wednesday evenings will feature over 560 posters, which you can browse at your leisure. You should also stop by the **ECS booth** to learn more about our programs and **Free the Science**, our initiative that aims to make our research freely available to anyone, anywhere to advance our sciences and solve problems for humanity.

Also, make sure to download the **ECS Mobile** app on your Apple or Android device, where you'll be able to access the **ECS meeting scheduler**. If you have any questions, please do not hesitate to stop by the **registration area** on the sixth floor of the convention center for further assistance.

Finally, I want to be sure to thank ECS Executive Director, Roque Calvo. Roque is leaving the Society after over 37 years of service. He joined ECS as the accounting supervisor in 1980. He's been executive director since 1991. A lot was accomplished during his tenure, including the digitization of the publishing process, expanding the Society's international reach, and creating the student chapter program, to name a few. When you see him at this meeting, be sure to thank him for his unwavering dedication.

We thank you again for your continued support of ECS!

Program Guide

Author Index	204	Highlighted Events.....	12
Awards, Division.....	23	Information for Presenters	4
Awards, Society	22	Institutional Members	50
Committee and Board Meetings	19	Local Area Map.....	6
Companion Registrant Program.....	2	Meeting Abstracts	3
Data Sciences Hack Week.....	15	Meeting App.....	3
Division Events	19	Message from the President.....	1
ECS Committees and Subcommittees	40	Plenary Session	22
ECS Division Officers.....	37	Poster Session Information	4
ECS Editorial Boards	36	Professional Development Workshops	13
ECS Officers and Staff	inside front cover	Registration Information.....	2
ECS Sections.....	37	Section Events.....	19
ECS Student Chapters.....	38	Sessions-at-a-Glance.....	54-55
ECS Transactions (ECST) for Seattle	39	Short Courses	14
Events-at-a-Glance.....	18	Sponsors.....	32
Exhibitors	26	Symposium Sponsors.....	34
Floor Plans	7-10	Symposium Topics.....	54
General Meeting Information	2-3	Technical Program	72
Get to Know ECS.....	3		

General Information

Meeting Registration

6th Floor Lobby (WSCC)

Sunday.....	0700-1900h
Monday.....	0700-1900h
Tuesday.....	0700-1730h
Wednesday.....	0700-1600h
Thursday.....	0700-1200h

Registration Fees*

On Site Registration Fees

Member	\$820
Nonmember.....	\$1,035
Student Member.....	\$480
Student Nonmember	\$540
One Day Member.....	\$655
One Day Nonmember	\$800
Emeritus & Honorary Member	\$0
Nontechnical Registrant.....	\$65

Who must pay the registration fee?

All meeting participants, including invited speakers, are required to pay the appropriate registration fees. Individuals participating in short courses along with the meeting are required to register for both events.

Companion / Nontechnical Registrant Program

Travel companions of attendees are invited to register for the meeting as a nontechnical registrant. The nontechnical registrant fee of \$65 includes admission to non-ticketed social events and a "Welcome to Seattle" gift packet, along with food and drink vouchers for the meeting venues.

Lost Badge or Ticket

There will be a \$30 charge for reprinting lost badges or tickets. Admittance will not be granted to ticketed events without an actual ticket. Tickets must be reprinted at registration during scheduled hours and cannot be reprinted at the event itself.

Short Course Registration

Three short courses are being offered on Sunday, May 13th from 0900h to 1630h with a complimentary short course breakfast being held from 0800h to 0900h. Pre-registration for short courses is required—the deadline was May 7, 2018; however, if you are interested in registering for a short course please stop by registration to see if space is available.

Short Course Registration Fees*

Course Only Regular Fees	Course Regular Fees (Price discounted with the purchase of a meeting registration)
Member	\$525\$450
Nonmember.....	\$650\$575
Student Member.....	\$262.50\$187.50
Student Nonmember	\$325\$250

*All prices are in U.S. Dollars.

Abbreviation Key

WSCC=Washington State Convention Center

SS=Seattle Sheraton

Walking Directions: Turn right out of the main entrance of the Sheraton until you come to the intersection at 6th Ave and Pike St. Turn right onto Pike Street and continue for 2 blocks until you reach the Washington State Convention Center on your right. (0.2 miles/4 min walk)

Things to Know

ADA Accessibility

Special accommodations for those attendees living with a disability will be handled on an individual basis. Contact the meeting headquarters today if you will need assistance by emailing meetings@electrochem.org or stop by registration on site.

Permissions Granted to ECS

ECS reserves the right to electronically record any or all meeting-related events. By registering for and/or attending an ECS meeting you are granting ECS permission to use any recording or photography made of you at any meeting event or anywhere within the meeting venue.

Speaker Indemnification

The ideas and opinions expressed in the technical sessions, conferences, and any handout materials provided are those of the presenter. They are not those of ECS, nor can any endorsement by ECS be claimed.

Photography and Recording Is NOT Permitted in Technical Sessions



By attending the ECS meeting, you agree that you will not record any technical session activity, without the express written consent of ECS. If you violate this policy you will be removed from the meeting and your registration will be revoked without the possibility of a refund.

Financial Assistance

Financial assistance is limited and generally governed by the symposium organizers. Contact your symposium organizers to see if funding is available. Individuals requiring an official letter of invitation should write to the meeting headquarters office; such letters will not imply any financial responsibilities of ECS.

Letters of Attendance

Individuals requiring an official letter of attendance should visit the "Letters of Attendance" self-help computer in the registration area or see a meeting representative.

Need an Invoice?

Your registration information and invoice are available to you 24 hours a day, 7 days a week from your own computer. Go to www.electrochem.org to log into your account to access this information today.



Get to Know ECS

The ECS Exhibit Booth

Stop by the ECS booth on the exhibit floor to engage and discover more about the programs and services available to you. Representatives from publications, membership, meetings, and development will be available at various times to answer your questions.

Learn more about:

- Individual and institutional membership at ECS
- How to publish with ECS and why publish open access
- Upcoming ECS biannual and sponsored meetings
- Exhibit, sponsorship and advertising opportunities
- *Free the Science* initiative
- Subscribing to the ECS Digital Library
- Awards, educational programs and much more!

Participate in other booth activities:

- Play ECS trivia for the chance to win drink tickets!
- Stop by each night to enter to win the following raffles:
 - **Interface ad (1/2 page)**
 - **Monographs (*Electrochemical Impedance Spectroscopy*, 2nd edition and *Atmospheric Corrosion*, 2nd edition)**
 - **1 APC article credit**
 - **Free meeting registration for the AiMES meeting**
 - **Free 5-year membership**
- Pick up ECS swag
- Make a donation to the ECS *Free the Science* initiative
- Book Signing by Johna Leddy: *Historical Perspectives on the Evolution of Electrochemical Tools Proceedings Volume*.

Publish with ECS Following Your Presentation

Consider submitting your work for publication with ECS after the biannual meeting. Content of proceedings from this meeting is published in *ECS Transactions*. Papers appearing in ECST are reviewed to ensure that submissions meet generally-accepted scientific standards. The submission deadline for the 233rd ECS Meeting *standard* issue is May 27, 2018.

ECS also offers continuous publication in two journals, *Journal of The Electrochemical Society* and the *ECS Journal of Solid State Science and Technology*, while maintaining the highest standards of peer review. ECS grants authors the choice to publish their research as open access, and many are able to do so for FREE through ECS membership or through the ECS Plus subscription program! To learn more, visit www.electrochem.org/oa or contact oa@electrochem.org for questions.

Join your community. Develop your potential. Advance your career.

Ask any ECS member why they joined ECS. Their response likely will be: “My advisor was a member of the Society and encouraged me to join,” or “ECS members receive great discounts on biannual meeting registrations.”

Next, ask them why they have remained an ECS member. Nearly all members will attest that, after joining the Society, ECS quickly became their family, connected them to a job opportunity, or helped advance their professional career.

ECS members receive great benefits—both in discounts and in professional development. Join today by visiting www.electrochem.org/join or by stopping by customer service in the registration area.

Free the Science

Free the Science is ECS’s initiative to move toward a future that embraces open science to further advance research in our fields. This is a long-term vision for transformative change in the traditional models of communicating scholarly research. ECS believes that openness democratizes access to the scientific process; to that end, ECS is committed to playing a crucial role in implementing the necessary changes. Learn more at www.freethescience.org.

Make the Most of Your ECS Experience

Meeting App

Download the ECS app, by searching “ECS mobile” in your app store, to put the technical program and personal meeting scheduler on your mobile device. Browse, add, and sync sessions, events, and presentations to create your own custom itinerary! Connect with ECS all year and stay informed with the latest news in the world of electrochemistry and solid state science. The meeting scheduler can also be found on the Seattle meeting homepage.

Tools for a Successful Meeting Experience

- Access all of the meeting abstracts online on the meeting website.
- Become familiar with the meeting layout by using the maps on pages 7-9.
- Turn off cell phones during presentations and remember photography and recording in the session rooms is prohibited.
- Get the feel for the real Seattle! Stop by The Seattle Visitor Center in the Convention Center where a guide can assist you with everything from tour bookings and sightseeing tips to dining reservations and local travel information. The desk is located in the main lobby area on Level 1, directly across from Espresso Caffé Dior.
- Become a Member! Stop by customer service, in the registration area, for more information.
- Visit the exhibit hall to network and learn more about the latest innovations in the industry.
- Tell us about your experience by completing the post conference survey we will send via email.

Make career strides in Seattle

- With the addition of new workshops and some of our classics, we are sure to offer something for every attendee through the Professional Development Workshops, more information on page 13.
- Expand your knowledge by registering for an ECS short course.
- Attend Annual Society Business Luncheon to learn more about the business behind the science, more information on page 12.
- Visit the Career Expo on the exhibit floor to meet employers and enjoy other career enhancement services offered through ECS. You’ll have the opportunity to get a *free* professional portrait by visiting the Career Expo on Tuesday and Wednesday evenings.
- Start planning what industry leading companies you will talk to on the exhibit floor. See the full list of exhibitors on page 26. Make sure to stop by the exhibit on Tuesday and Wednesday afternoon for our Networking Breaks.
- Check out the ECS Jobs Board, available all year round on www.electrochem.org/jobs-board
- Get your research published! Submit your paper to ECS’s meeting proceedings publication, *ECS Transactions*. While at the meeting, make sure to preregister to attend the Author Information Session and visit the ECSarXiv booth in the Career Expo to learn how this new service, launching in 2018, can benefit you!

Meeting Abstracts

Always right at hand—and as always, **FREE** with registration. Registrants may easily access all abstracts via the meeting scheduler or may download them from the meeting website. Paper editions of meeting abstracts are not distributed; attendees who require paper should download abstracts and print them in advance of the meeting.

General Information

Information for Presenters

Oral presentations must be in English. Laptop computers and projectors will be available in each symposium room for presentations, and presenting authors **MUST** have their presentation on a USB flash drive to be used with the dedicated laptop. Speakers requiring special equipment must have submitted a written request to ECS headquarters (meetings@electrochem.org) prior to the meeting; no special requests will be handled onsite. Additional information for oral presentations are as follows:

- Arrive to your session room early and introduce yourself to the session Chairs (they will have a blue session chair ribbon on their nametag).
- No additional time is given for Q&A. If you plan to have Q&A, be sure to prepare your talk accordingly, based on the duration you were given in your acceptance notification.
- There is no speaker ready room.

Poster presentations must be in English, and correspond to the abstract number and assigned date of presentation, as detailed in your acceptance notification. Additional information for the poster sessions are as follows:

- No posters will be displayed without author participation, no exceptions will be granted.
- You must remove your poster at the end of each session. Any posters left will be discarded.
- Posters may be mounted from 1400-1700h on Monday, Tuesday and Wednesday. **You may only mount your poster on the day of your presentation.**
- Pushpins and/or thumbtacks will be supplied.
- There will be two posters per board, so allow equal space for the second poster on your board.
- Authors are responsible for the security of their displays and all items of value; ECS will not assume any responsibility for lost, stolen, or broken articles.

You may **only** mount your poster on the day of your presentation.

Monday	1400-1700h
Tuesday	1400-1700h
Wednesday	1400-1700h

The Student Poster Session will be held as a part of the Tuesday General Poster Session and Technical Exhibit. Students may set up their presentations from 1400-1700h; judging of the posters will begin at 1700h and formal presentations will begin at 1800h. Winners will be announced and awards will be presented during the Wednesday General Poster Session from approximately 1815-1830h.

Commercial advertisements or publicity will **NOT** be permitted during oral or poster presentations.

For further detailed information on oral and poster presentation requirements, please visit the Author & Presenter Info page on the Seattle website.

MILLIPORE SIGMA

THE MASTERS OF MATERIALS

Expertise at the nanoscale

SigmaAldrich.com/nanomaterials

Sigma-Aldrich
Lab & Production Materials

© 2018 Merck KGaA, Darmstadt, Germany and/or its affiliates. All rights reserved. MilliporeSigma, Sigma-Aldrich and the related trademarks of Merck KGaA, Darmstadt, Germany or its affiliates, all other trademarks are the property of their respective owners. Detailed information on trademarks is available on publicly accessible resources. 2018-1024

The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the U.S. and Canada.

Transforming atomic-scale engineering with market-leading deposition, etch, and clean technologies for front-end wafer processing and advanced packaging applications

Learn how our innovative solutions can help you achieve success on the wafer

Lam
RESEARCH

Connect with us

www.lamresearch.com



NOW MAKING WAVES

NEW
WAVEDRIVER 200
WITH EIS

EXPERIENCE OUR
EIS LIVE
AT THE MONDAY NIGHT
BEACH PARTY!

PINE RESEARCH BOOTH
STARTING AT 6:00 PM

FREE BEACH SWAG!

#REDUCKSWAVES



Floor Plans

Key Locations in Seattle

LOCAL AREA MAP





2018 Spring Biannual Meeting
May 13-17, 2018

1. Sheraton Seattle Hotel (HQ)

VISIT seattle

Pike Place Market to CenturyLink Event Center: 1 mi / 1.6 km
 Pike Place Market to Space Needle: 1 mi / 1.6 km
 Pike Place Market to Convention Center: ½ mi / 800 m

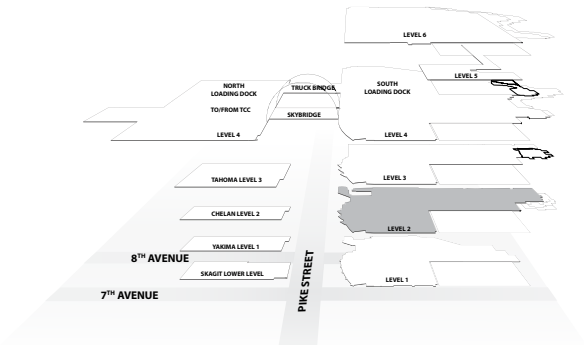
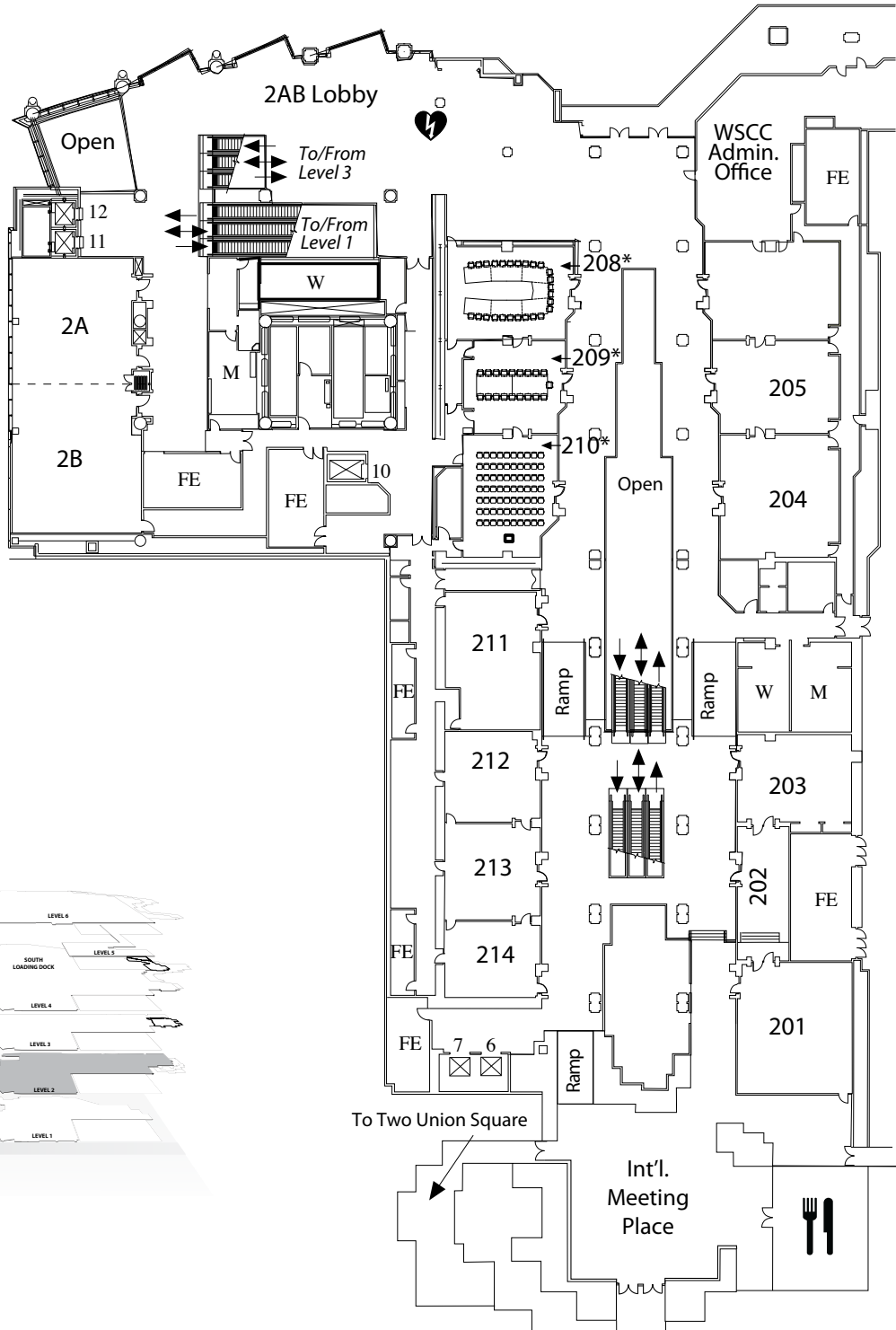
<ul style="list-style-type: none"> ● MAJOR ATTRACTION ● PARK BUS/LIGHT RAIL TUNNEL STATION ● CONVENTION HOTEL 	<ul style="list-style-type: none"> ●●●● S. LAKE UNION STREETCAR BUS/LIGHT RAIL TUNNEL SEATTLE CENTER MONORAIL INFORMATION CENTER
---	---

Floor Plans

Key Locations in Seattle

WASHINGTON STATE CONVENTION CENTER FLOOR PLANS

Level 2



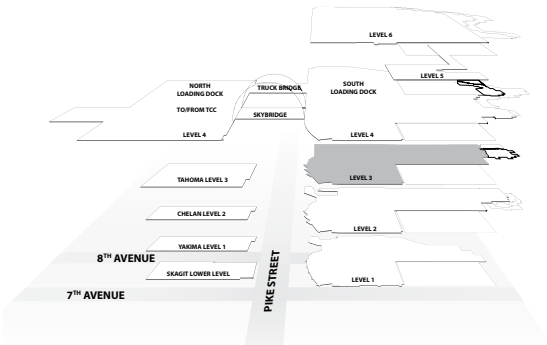
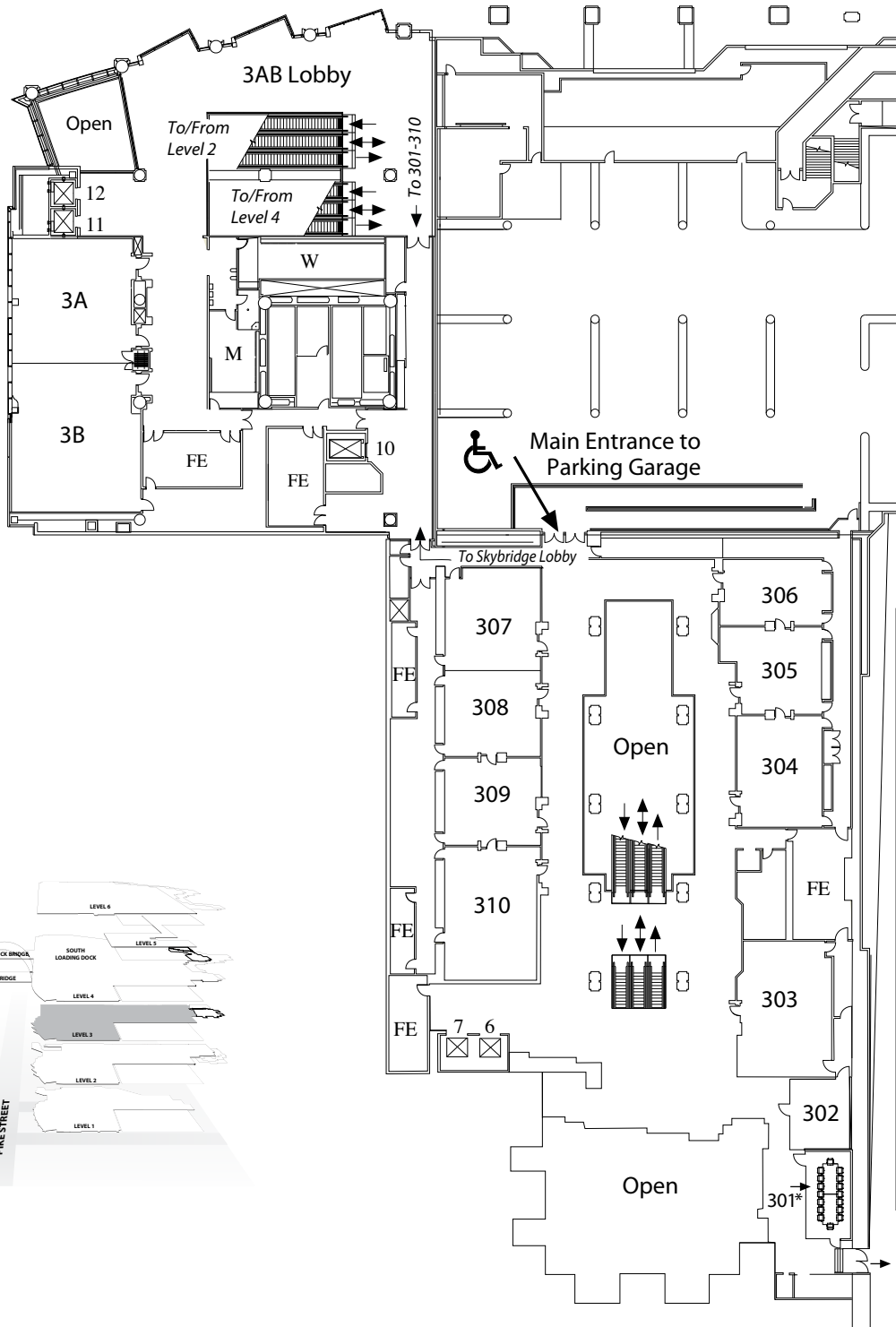
Floor Plans

Floor Plans

Key Locations in Seattle

WASHINGTON STATE CONVENTION CENTER FLOOR PLANS

Level 3

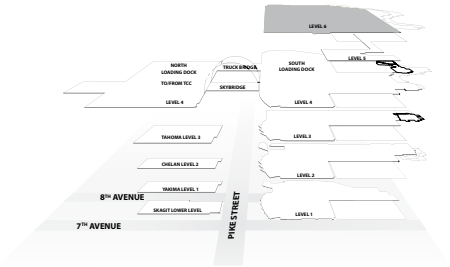


Floor Plans

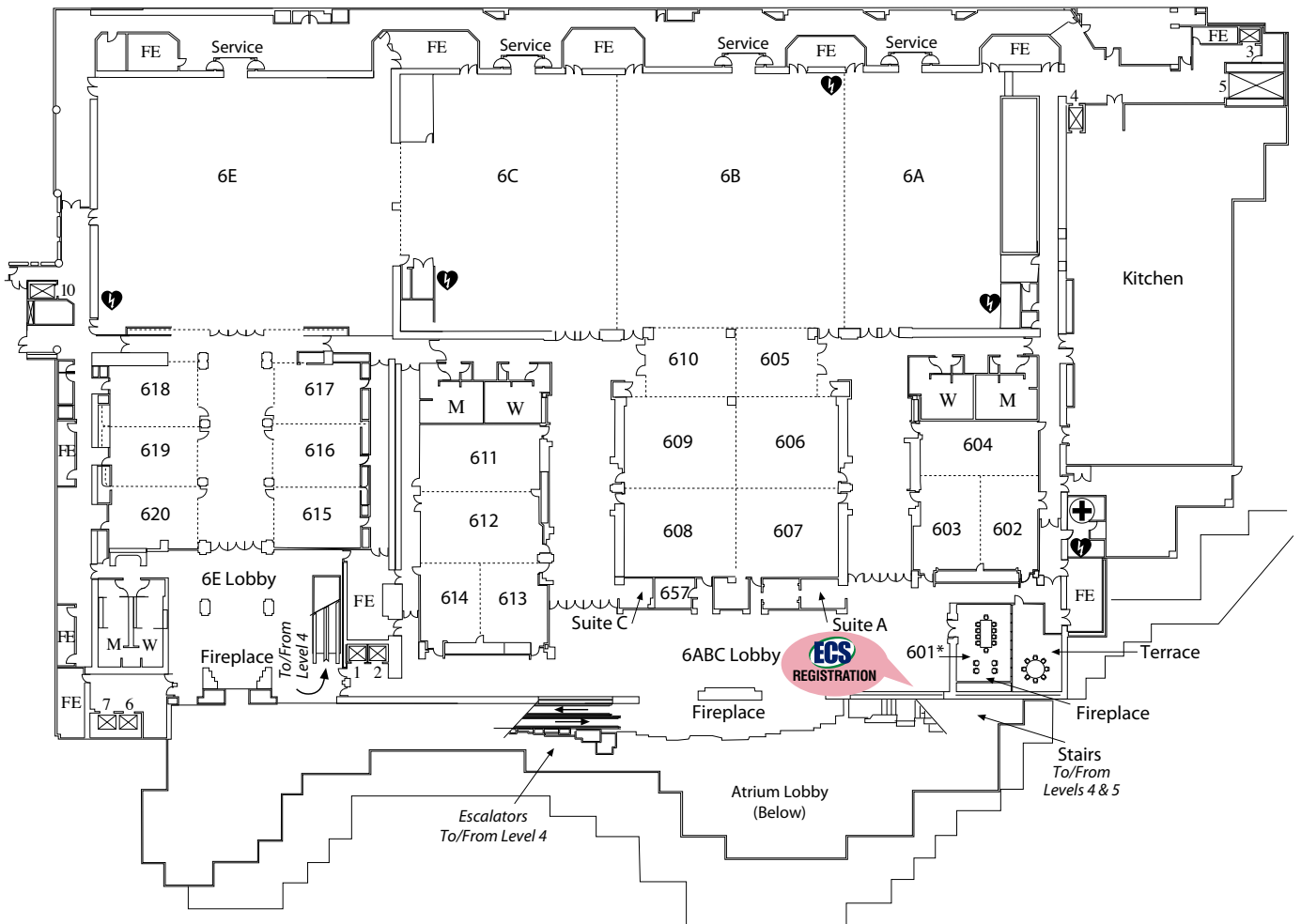
Key Locations in Seattle

WASHINGTON STATE CONVENTION CENTER FLOOR PLANS

Level 6



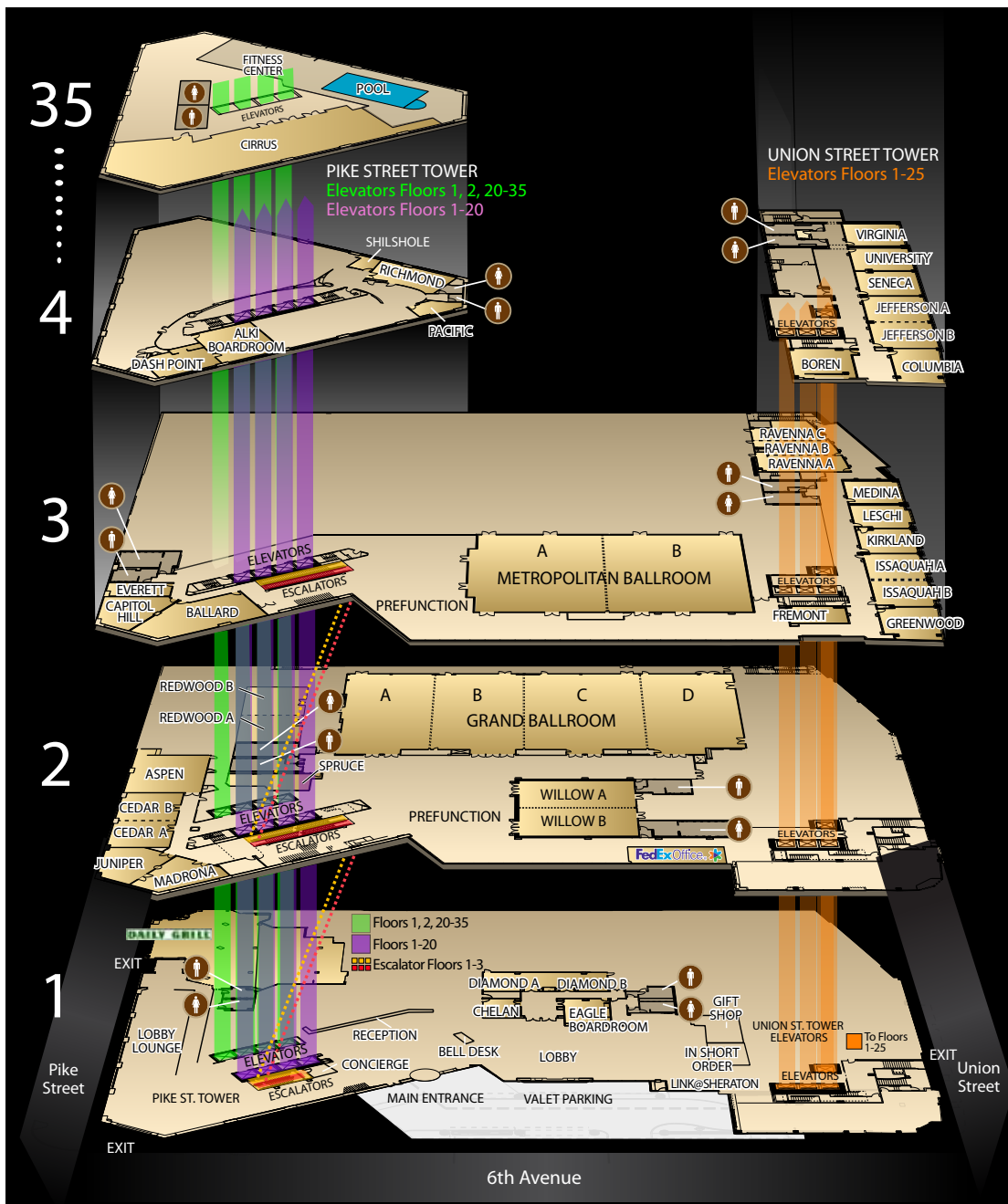
Floor Plans



Floor Plans

Key Locations in Seattle

SEATTLE SHERATON



1st Floor	2nd Floor	3rd Floor	4th Floor	35th Floor
BELLDISK CHELAN CONCIERGE DAILY GRILL DIAMOND A DIAMOND B EAGLE BOARDROOM GIFT SHOP IN SHORT ORDER LOBBY LOBBY LOUNGE RECEPTION VALET PARKING	ASPEN FEDEX OFFICE CEDAR A CEDAR B GRAND BALLROOM A, B, C, D JUNIPER MADRONA REDWOOD A REDWOOD B SPRUCE WILLOW A WILLOW B	BALLARD CAPITOL HILL EVERETT FREMONT GREENWOOD ISSAQUAH A ISSAQUAH B KIRKLAND LESCHI MEDINA METROPOLITAN BALLROOM A, B RAVENNA A RAVENNA B RAVENNA C	Pike Street Tower: ALKI BOARDROOM DASH POINT PACIFIC RICHMOND SHILSHOLE Union Street Tower: BOREN COLUMBIA JEFFERSON A JEFFERSON B SENECA UNIVERSITY VIRGINIA	Pike Street Tower: CIRRUS FITNESS CENTER POOL



The Next Level of Bipotentiostat Design

Introducing the

PARSTAT 3000A-DX

- Dual channel potentiostat and hardware synchronized bipotentiostat in one
- Combine with our rotator, accessories, and software for a complete RRDE analysis solution
- Compact design featuring two independent potentiostats each with EIS capability as standard
- A high performance system with ± 30 V polarization/ compliance and ± 2 A current



www.ameteki.com

AMETEK[®]

Highlighted Events

Highlighted Events

Opening Reception *(new & improved)* 4th Floor Atrium Lobby (WSCC)

Sunday.....1900-2100h

Come get a taste for Seattle and help kick-off an exciting week! All attendees are welcome to attend for light snacks, an open bar, and ample time to network.

Session Chair and Symposium Organizer Breakfast 2AB (WSCC)

Monday.....0700-0800h

The success of the meeting is very much due to the hard work of the session chairs, symposium organizers, and division members. All are encouraged to attend this orientation to ensure they are best prepared for their roles in the meeting, and to learn helpful information about future meetings.

Technical Exhibition *(new hours)* Ballroom 6ABC (WSCC)

Monday.....1800-2000h

Tuesday and Wednesday1400-2000h

Take time to explore exhibits from the leading vendors in the electrochemical and solid state science fields. Make sure to also stop by the exhibit hall for Poster Sessions and the Networking Breaks.

Student and General Poster Sessions Ballroom 6ABC (WSCC)

Monday, Tuesday and Wednesday.....1800-2000h

With hundreds of posters to explore, you won't want to miss a minute of these sessions. Grab a snack, wander the aisles, review the presentations, talk to the authors, share some laughs... these sessions are a great way to end the day!

Networking Breaks *(new)* Ballroom 6ABC (WSCC)

Tuesday and Wednesday1530-1600h

We have taken attendee feedback and put it into action by implementing these afternoon breaks. Take a moment to stretch your legs, reenergize with coffee or tea and network with exhibitors before your next session.

Student Mixer Grand Ballroom B (SS)

Monday.....2000-2200h

The mixer is a must attend event for students! Enjoy networking with your peers and early career professionals while light food and refreshments are served.

Member.....\$5.00
Nonmember.....\$15.00

Annual Society Business Meeting and Luncheon Grand Ballroom B (SS)

Tuesday1200-1400h

Join us as we celebrate the many successes of 2017 and look forward to an even brighter future! This luncheon will also feature a special talk titled, "Electrochemistry & the Electrification of Everything in the Era of Low Cost Renewable Energy" by David Danielson, Managing Director of the Breakthrough Energy Coalition.

ECS Fellow.....\$45.00
Member.....\$55.00
Nonmember.....\$65.00

Author Information Session 2A (WSCC)

Tuesday1600h-1700h

Are you interested in publishing with ECS and have questions? Join *Journal of The Electrochemical Society* Editor, Robert Savinell, and *ECS Transactions* Editor, Jeff Fergus, as they present insight to:

- Opportunities available for publishing with ECS
- Understanding the journals continuous publication model and types of articles published by ECS.
- How to publish open access and how ECS's *Free the Science* initiative supports open access for authors.
- Where content is accessible after publication plus more.

Unable to attend? Stop by the ECS booth in the exhibit hall to connect one-on-one with ECS publications staff.
Pre-registration is required, visit customer service to sign up.

Professional Portraits *(free)* Ballroom 6ABC (WSCC)-Career Expo Area

Tuesday and Wednesday1700-2000h

Update your LinkedIn with a new photo! Meeting attendees can take the opportunity to receive a complimentary professional portrait at the ECS Career Expo. *No appointment necessary.*

Trip to Microsoft SOFC Powered Data Center *(new)* Location: Seattle Sheraton Lobby

Thursday1400h – 1600h

Did you know that data centers across the country account for up to 2% of all U.S. electricity usage? As this percentage increases, new solutions are needed to help increase the efficiency, cost, and delivery of the energy required to power today's networked computing and storage needs.

Join us for an excursion to see Microsoft's state of the art data center, powered by solid oxide fuel cells (SOFC). Participants will take a tour of the facility and have the ability to ask Microsoft staff questions about the test center and the SOFC technology involved. The \$10 fee will cover the transportation to and from the facility.

Member/Nonmember\$10.00

ECS Data Sciences Hack Week *(extended)* Monday – Saturday

The ECS Data Sciences Hack Week is the Society's continuing work on building an electrochemical data sciences and open source community, now expanded to a full week. All electrochemical engineers can benefit from this workshop, whether experimentally or theoretically focused. Learning how to create, share, use, and improve open source software tools and public datasets is one way to accelerate research progress in our field (*see page 15 for more information*).
Pre-registration is required, visit customer service to sign up.

Highlighted Events

Professional Development Workshops

Essential Elements for Employment Success 2B (WSCC)

Instructor: John Susko

Monday 1000-1200h

Landing your next job requires selective and effective networking, developing and submitting specifically targeted resumes and cover letters, locating relevant job opportunities and preparing for and participating in the job interview. This workshop will provide up-to-date information and tips for employment success. *This is a two-hour workshop.*

**You will be able to sign-up for a resume review appointment during this session. Appointments are limited and available on a first come, first serve basis.*

Nonmember \$15.00
Member \$10.00
Student Member \$5.00

Resume Review

Career Expo on the Exhibit Floor / Ballroom 6ABC (WSCC)

Appointment Only

**You must register for Essential Elements for Employment Success in order to participate.*

Instructors: John Susko & Michel Fouré

Attend the Essential Elements for Employment Success workshop to schedule your appointment for a one-on-one resume review with an expert on resume development. *Appointments are 20-minutes in length.*

An Introduction to Intellectual Property (new)

2B (WSCC)

Instructor: Matthew Rappaport

Monday 1400-1630h

In recent years intellectual property has become contentious with notable high-tech companies influencing patent rights. Nevertheless, IP continues to play a key role in the development and innovation ecosystem, particularly for start-ups and early-stage commercialization. In this workshop, we will get down to basics in exploring the role of IP in protecting your early-stage development and commercialization. Along the way, we will review IP basics and explore portfolio development to help protect your inventions. Decisions such as internal R&D, strategic partnerships or licensing are informed by your portfolio. And finally, what to do when you have to enforce your rights. *This is a 2.5 hour workshop.*

Nonmember \$75.00
Member \$50.00
Student Member \$25.00

Refresh & Connect: An ECS Mentoring Session

2B (WSCC)

Tuesday 1000-1130h

ECS coordinates a group of mentors to meet with students and early career professionals in small roundtable groups. The discussions topics vary and are often led by the group. Topics that are often covered usually focus on or around career-life balance, building contacts and networks, questions about career paths, and perspective experiences. This is a 90-minute roundtable workshop.

Pre-registration is required, visit customer service to sign up.

Running an Effective Meeting (new)

2B (WSCC)

Instructor: Dennis Hess

Tuesday 1600-1700h

Meetings are activities that play a critical role in decision-making and change within the successful operation of a team or organization. Unfortunately, meetings are frequently viewed as bad, ineffective, and a waste of time. Such conclusions are often justified because they result from ineffective leadership and unprofessional behavior by attendees. This workshop will explore reasons for the inappropriate conduct displayed and discuss approaches to facilitate effective and productive meetings. *This is a one-hour workshop.*

Nonmember \$15.00
Member \$10.00
Student Member \$5.00

Grant Writing 101 (new)

2B (WSCC)

Instructor: Michel Fouré

Wednesday 0900-1130h

Whether your career takes you to Industry, Academia or a National Lab, chances are that you will be intimately involved in writing research grant proposals. In fact, your career growth may largely hinge on your ability to raise funding. While each proposal is unique, lying at the intersection of the funding agency needs and your technical idea, there are very important guidelines that must be observed in order to maximize the probability of success. As this workshop is interactive, it would be particularly meaningful and useful for the participants to be prepared to work with a real example. This could be a proposal they have submitted in the past or one they anticipate to submit. *This workshop is 2.5 hours.*

Nonmember \$75.00
Member \$50.00
Student Member \$25.00

Managing and Leading Teams

2B (WSCC)

Instructor: Dennis Hess

Wednesday 1400-1600h

Nearly all engineers and scientists work in teams where a leader oversees and guides process/product development and direction. When technically-trained individuals undertake a leadership role, frustration is a frequent outcome, despite technical competency and good intentions. This workshop will discuss reasons why engineers and scientists often find adaptation into leadership roles disconcerting and will explore ways to smooth the transition. *This is a two-hour workshop.*

Nonmember \$15.00
Member \$10.00
Student Member \$5.00

Highlighted Events

Short Courses

ECS sponsors day-long short courses in conjunction with the biannual Society meetings. Courses range in topics across technical interest areas. Short course participation does require registration to be completed before each biannual meeting. Students are offered a 50% discount on short course registration. For more information, and the instructor bio's, visit the meeting website.

Short course registration also includes:

Breakfast	Morning Coffee Break	Lunch	Afternoon Coffee Break
3B (WSCC) 0800-0900h	3B (WSCC) 0945-1015h	3B (WSCC) 1200-1330h	3B (WSCC) 1500-1530h

Advanced Impedance Spectroscopy

2A (WSCC)

Instructor: Mark Orazem

This course is intended for chemists, physicists, materials scientists, and engineers with an interest in applying electrochemical impedance techniques to study a broad variety of electrochemical processes. The attendee will develop a basic understanding of the technique, the sources of errors in impedance measurements, the manner in which experiments can be optimized to reduce these errors, and the use of graphical methods to interpret measurements in terms of meaningful physical properties.

Topics to be covered

- The motivation for using impedance spectroscopy advantages as compared to other transient techniques and the conditions under which its use is ideally suited;
- The basic concepts of how impedance is measured;
- Proper selection of experimental parameters;
- Graphical representation of impedance data, including methods to extract some physically meaningful parameters;
- Constant-phase elements;
- Application of electrical circuit analogues, and
- The meaning of the Kramers-Kronig relations.

The concepts will be illustrated by applications to different systems including corrosion, fuel cells, batteries, and transport through membranes such as skin. A list of suggested references will be provided.

Rechargeable Battery Materials

2B (WSCC)

Instructors: Shirley Meng and Boryann Liaw

Designing better materials for rechargeable batteries requires understanding of the many physical processes that determine their performance. The aim of the course is to provide a foundation for understanding key materials science and engineering issues underpinning the behaviors of electrode and electrolyte materials for rechargeable batteries. With the relevant examples, the course will further illustrate how the direction integration of first principles computation with advanced experimental characterization can accelerate the pace of discovering and optimizing new higher energy/power density materials for electrochemical energy storage

Topics to be covered

- A brief history of electrochemical energy storage
- Thermodynamics foundation for electrochemistry
- Crystal structures and condensed matter physics for understanding battery materials
- Phase transformation & kinetics in electrode materials
- Liquid electrolytes vs. solid electrolytes
- First principles computation and its role in battery materials research
- Electronic structure and transport properties
- Nano-scale phenomena in batteries
- Advanced operando characterization for energy devices
- Importance of Interface and Surfaces
- Safety and mitigation strategies in rechargeable batteries

Electrodeposition for Energy Applications

3A (WSCC)

Instructors: Stanko Brankovic and Giovanni Zangari

Electrodeposition is widely being used in the fabrication of materials and devices, and most recently this technique has been successfully applied to the fabrication of various components in energy conversion systems. This course will offer the opportunity to students, researchers and practitioners with a variety of technical backgrounds to be introduced for the first time or to refresh their understanding of the fundamentals of the technique, as well as to gain a perspective of its potentials in nanostructure fabrication, with particular focus on energy conversion and storage application. In this course the attendees will gain practical knowledge of the methods and techniques used in the synthesis of catalysts for fuel cells, components for batteries and capacitors, and radiation absorbers for photovoltaic and photoelectrochemical devices.

Topics to be covered

The course will be structured in two modules:

- Fundamentals of electrodeposition
 - Thermodynamics and kinetics
 - Thin film formation: the art and science of controlling microstructure and morphology
 - Electrochemical engineering aspects
- Electrodeposition for energy conversion devices
 - Surface control electrochemical film formation down to the single atomic layer: Surface Limited Replacement Reaction and Electrochemical Atomic Layer Epitaxy
 - Electrodeposition of electrocatalyst materials
 - How to produce interpenetrating structures: application to batteries and supercapacitors
 - Thin film and nanostructured radiation absorbers for photovoltaic and photoelectrochemical devices.

Are you interested in our
Exhibit and Sponsorship
Opportunities?

Contact
sponsorship@electrochem.org
for more information.





ECS Data Sciences Event Grows to a Full Week

May 14-19, 2018

Ravenna AB (SS)

Building on the success of the first ECS Data Sciences Hack Day (October 2017), ECS is offering another opportunity at the ECS spring meeting in Seattle. The program has been expanded to an entire week as the next stage in ECS supporting a growing electrochemical data science and open source community. The goal of this event is to increase awareness and impact of data science tools, open source software, and shared datasets in electrochemistry and solid state science and technology, by bringing together people from different backgrounds to collaborate.

Hack Week is again being led by the very capable and engaging team from University of Washington: Dan Schwartz, David Beck, and Matt Murbach. The program kicks off on Monday, May 14 and full sessions run all day Wednesday through Friday, as well as optional software training tutorials during the week. The activities culminate with project presentations and an optional clamming expedition on Saturday, a traditional activity in the Puget Sound area. An application was required for participation in the project; to see if any last-minute slots have opened up, stop by customer service in the registration area.

Meet the Organizers



DANIEL SCHWARTZ



DAVID BECK



MATTHEW MURBACH

Daniel Schwartz is the Boeing-Sutter Professor of Chemical Engineering and Director of the Clean Energy Institute at the University of Washington, and brings electrochemistry and modeling expertise to the team. **David Beck** is a Sr. Data Scientist with the eSciences Institute at the University of Washington, and leads regular hackathons; he is Associate Director of the NSF Data Intensive Research Enabling CleanTech (DIRECT) PhD training program. **Matthew Murbach** is past-president of the University of Washington ECS Student Chapter, and an advanced data sciences PhD trainee; he has been leading the student section software development sessions on the UW campus, and has practical experience coaching electrochemical scientists and engineers in software development.

Attendees

The goal of this event is to increase awareness and impact of data science tools, open source software, and shared datasets in electrochemistry by bringing together people from different backgrounds to collaborate. As of press time, there are still slots available, and the organizers are seeking to build a cohort comprised of people with a diverse mix of experimental and theoretical electrochemical expertise, as well as a range of prior experiences creating and using open source software and Python programming.

Travel Grants

A number of travel awards have been made possible by generous grants from the Army Research Office and the University of Washington Clean Energy Institute.

Schedule

This schedule is as of press time; check www.electrochem.org/233/hack-week for the most up-to-date version.

Monday, May 14

- 1300-1600h.....(Optional Segment) Introduction to Data Science Tools #1
(using the shell/terminal, version control)
- 1930-2030h.....Hack Week Kickoff Event

Tuesday, May 15

- 1300-1600h.....(Optional Segment) Introduction to Data Science Tools #2 (introduction to Python using Conda and Jupyter)

Wednesday, May 16*

- 0830-1200h.....Intermediate Python Topics
(documentation and testing)
- 1200-1300h.....Project Updates/Ideation and Team Formation (over lunch)
- 1300-1800h.....Project Hacking Time
(1500h: breakout session for data visualization)

Thursday, May 17*

- 0830-1200h.....Advanced Topics
(cloud computing and machine learning w/Python)
- 1200-1330h.....Lunch Break
- 1330-1800h.....Project Hacking Time
(1500h: breakout session on reproducibility)

Friday, May 18

- 0830-1200h.....Project Hacking Time
- 1200-1330h.....Lunch Break
- 1330-1630h.....Project Hacking Time
- 1700-1900h.....Project Presentations and Wrap Up

Saturday, May 19 (optional)

- 0900-1300h.....(Optional) Social Event
(clamming in the Puget Sound area)
- 1300-1700h.....(Optional) Social Event Continues
(cooking the catch and socializing)

**Note: The session room will remain open until 2330h for continued project hacking on Wednesday and Thursday.*

The best answers come out
of the blue...



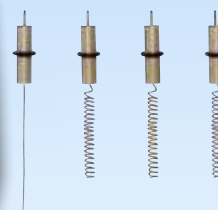
Battery Testers



High Current Boosters



Potentiostats



Accessories



Full range of E-Chem products available at:
www.bio-logic.net

Advertise with ECS!

Reach your target audience

- 6,000 readers of *Interface*, our quarterly publication
- 29,000 weekly eNews subscribers
- 241,000 ECS Digital Library visitors per month
- 36,000 electrochem.org visitors per month

ECS advertising opportunities get your brand in front of leading scientists, engineers, researchers, and policy makers from around the world.

Promote your products and services to the best and brightest minds in the electrochemical and solid state science industry.

With both print and digital options, we can create a package to fit your needs and your budget!

Contact us at sponsorship@electrochem.org.



Featured Events

Meeting Events-at-a-Glance

Sunday, May 13

- 0700-1900h Meeting Registration is open, *6th Floor Lobby (WSCC)*
- 0800-0900h Short Course Breakfast (**ticket for courses required*), *3B (WSCC)*
- 0800h Technical Sessions begin (check technical program on pg. 72 for details)
- 0900-1630h Short Courses (**ticket required*), *see pg. 14 for locations*
- 1900-2100h Opening Reception, *4th Floor Atrium Lobby (WSCC)*

Monday, May 14

- 0700-1900h Meeting Registration is open, *6th Floor Lobby (WSCC)*
- 0700-0800h Session Chair and Symposium Organizer Orientation Breakfast, *2AB (WSCC)*
- 0800h Technical Sessions begin (check technical program on pg. 81 for details)
- 0930-1000h Technical Session Coffee Break, *3rd and 6th Floor Lobby (WSCC)*
- 1000-1200h Essential Elements for Employment Success (**ticket required*), *2B (WSCC)*
- 1200-1230h VisitSeattle Presentation, *3A (WSCC)*
- 1400-1630h Introduction to Intellectual Property (**ticket required*), *2B (WSCC)*
- 1400-1700h Poster Set-up Period - Monday Evening Posters, *Ballroom 6ABC (WSCC)*
- 1700-1800h Plenary Session, *Ballroom 6E (WSCC)*
- 1800-2000h Technical Exhibit, Career Expo, General Poster Session, *Ballroom 6ABC (WSCC)*
- 1830-2100h L02 Reception in Honor of Radoslav Adzic, *Willow A (SS)*
- 2000-2200h Student Mixer (**ticket required*), *Grand Ballroom B (SS)*

Tuesday, May 15

- 0700-1730h Meeting Registration is open, *6th Floor Lobby (WSCC)*
- 0800h Technical Sessions begin (check technical program on pg. 111 for details)
- 0930-1000h Technical Session Coffee Break, *3rd and 6th Floor Lobby (WSCC)*
- 1000-1130h Refresh and Connect: An ECS Mentoring Session, *2B (WSCC)*
- 1200-1400h Annual Society Business Meeting and Luncheon (**ticket required*), *Grand Ballroom B (SS)*
- 1400-2000h Come visit our Exhibitors!, *Ballroom 6ABC (WSCC)*
- 1400-2000h Career Expo, *Ballroom 6ABC (WSCC)*
- 1400-1700h Poster Set-up Period - Tuesday Evening Posters, *Ballroom 6ABC (WSCC)*
- 1530-1600h Networking Break, *6ABC (WSCC)*
- 1600-1700h Running an Effective Meeting, (**ticket required*) *2B (WSCC)*
- 1600-1700h Author Information Session (***pre-registration required*), *2A (WSCC)*
- 1630-1830h L06 Nanoporous Materials Reception, *615 (WSCC)*
- 1800-2000h General & Student Poster Session, *6ABC (WSCC)*

Wednesday, May 16

- 0700-1600h Meeting Registration is open, *6th Floor Lobby (WSCC)*
- 0800h Technical Sessions begin (check technical program on pg. 153 for details)
- 0900-1130h Grant Writing 101 (**ticket required*), *2B (WSCC)*
- 0930-1000h Technical Session Coffee Break, *3rd and 6th Floor Lobby (WSCC)*
- 1400-1500h Open Science & ECSarXiv Information Session, *3A (WSCC)*
- 1400-1600h Managing and Leading Teams (**ticket required*), *2B (WSCC)*
- 1400-2000h Come visit our Exhibitors!, *Ballroom 6ABC (WSCC)*
- 1400-2000h Career Expo, *Ballroom 6ABC (WSCC)*
- 1400-1700h Poster Set-up Period - Wednesday Evening Posters, *Ballroom 6ABC (WSCC)*
- 1530-1600h Networking Break, *6ABC (WSCC)*
- 1800-2000h General Poster Session, *6ABC (WSCC)*
- 1815-1830h Z01 Student Poster Award Winner Presentation, *6ABC (WSCC)*

Thursday, May 17

- 0700-1200h Meeting Registration is open, *6th Floor Lobby (WSCC)*
- 0800h Technical Sessions begin (check technical program on pg. 190 for details)
- 0930-1000h Technical Session Coffee Break, *3rd and 6th Floor Lobby (WSCC)*
- 1400-1600h Microsoft Data Center Tour, *Seattle Sheraton Lobby (*ticketed event)*

**ticket required: tickets may be purchased in advance or by stopping by customer service.*

***pre-registration required: event is free, but you must sign up in advance by stopping by customer service.*

Featured Events

Division Events

Sunday, May 13

- 1600-1700h Electronics and Photonics Division Symposium Planning and Technical Directions Subcommittee, *Seneca (SS)*
- 1700-1800h Electronics and Photonics Division SOTAPOCS and Wide Bandgap Symposium Planning Subcommittee, *Seneca (SS)*
- 1700-2000h Dielectric Science and Technology Division Governing Body / Long Range Planning Committee and Symposium Planning, *University (SS)*
- 1800-2045h Sensor Division Executive Committee, *Jefferson A (SS)*
- 1800-2100h Physical and Analytical Electrochemistry Division Symposium Planning Committee, *Jefferson B (SS)*
- 1900-2000h Electronics and Photonics Division Award and General Business Meeting, *Virginia (SS)*
- 1900-2100h Industrial Electrochemistry and Electrochemical Engineering Division Symposium Planning Committee, *Columbia (SS)*
- 2000-2200h Electronics and Photonics Division Executive Committee, *Seneca (SS)*

Monday, May 14

- 0700-0900h High Temperature Materials Division Executive Committee, *University (SS)*
- 0700-0900h Industrial Electrochemistry and Electrochemical Engineering Division Executive Committee, *Jefferson AB (SS)*
- 0700-0900h Physical and Analytical Electrochemistry Division Executive Committee, *Columbia (SS)*
- 1215-1400h Industrial Electrochemistry and Electrochemical Engineering Division Business Meeting and Luncheon, *Willow B (SS)*, *ticketed: \$75.00
- 1800-2000h Nanocarbons Division Executive Committee, *Cedar AB (SS)*
- 1800-2000h Organic and Biological Electrochemistry Division Executive Committee, *Columbia (SS)*
- 1900-2100h Energy Technology Division Executive Committee Meeting, *Jefferson AB (SS)*

Tuesday, May 15

- 1900-2030h Physical and Analytical Electrochemistry Division Business Meeting and Grahame Award Reception, *Jefferson AB (SS)*, *ticketed: \$30
- 1900-2100h Organic and Biological Electrochemistry Division Baizer Award Reception, *Seneca (SS)*
- 1930-2130h Nanocarbons Division Reception, *Willow AB (SS)*, *ticketed: \$5.00

Wednesday, May 16

- 1200-1400h Nanocarbons Division External Advisory Board, *Boren (SS)*
- 1215-1400h Energy Technology Division Business Meeting and Award Luncheon, *Willow B (SS)*, *ticketed: \$75.00
- 1215-1400h Organic and Biological Electrochemistry Division Business Meeting and Luncheon, *Seneca (SS)* *ticketed: \$75.00

*ticket required: tickets may be purchased in advance or by stopping by customer service. Ticket price reflects on site pricing.

Section Events

Monday, May 14

- 1800-1900h Europe Section Executive Committee, *Redwood A (SS)*
- 1900-2000h Europe Section Meeting, *Redwood A (SS)*

Committee and Board Meetings

Sunday, May 13

- 1600-1730h Interface Advisory Board, *Aspen (SS)*
- 1600-1730h Fellows Review Subcommittee, *Cedar A (SS)*

Monday, May 14

- 0800-1000h Joint Journal Editorial Board, *Redwood AB (SS)*
- 1030-1200h ECS Transactions Editorial Board, *Aspen (SS)*
- 1300-1430h Education Committee, *Cedar A (SS)*
- 1330-1530h Publications Subcommittee, *Aspen (SS)*
- 1500-1630h Individual Membership Committee, *Cedar B (SS)*
- 1530-1630 Interdisciplinary Science and Technology Subcommittee, *Redwood B (SS)*

Tuesday, May 15

- 0700-0930h Symposium Planning Advisory Board, *Grand Ballroom B (SS)*
- 0730-0930h Council of Past Presidents, *Columbia (SS)*
- 1000-1200h Meetings Subcommittee, *Aspen (SS)*
- 1600-1800h Honors and Awards Committee, *Cedar A (SS)*

Wednesday, May 16

- 0700-1000h Technical Affairs Committee, *Aspen (SS)*
- 1000-1100h Sponsorship Committee, *Cedar A (SS)*



WiFi

MEETING NETWORK

Name: freethescience

Password: openaccess

Career Expo Booth Listing



ECSarXiv
Booth 605

<https://www.electrochem.org/ecsarxiv/>

ECSarXiv is a free online service for preprints (and other preliminary communications) in electrochemistry and solid state science and technology, not yet published in a peer-reviewed outlet. Preprints do not replace journal papers, they precede them. There is no fee to submit, and no fee to read. ECSarXiv enables fast and citable research outputs, collaboration, and visibility for researchers. Stop by our booth to learn more!



Korea Institute of Science and Technology
Booth: 503

Korea Institute of Science and Technology (KIST) is the first and significant multidisciplinary institute founded in Korea, and National Agenda Research Division of KIST is composed of four research centers (Clean Energy, Fuel cell, Photo-electric Hybrids, and Sensor system) which develop the original technology in the field of renewable energy and safety management.



Professional Portraits

Booth: 600

Tuesday & Wednesday 1700h-2000h

Update your LinkedIn with a new photo! Meeting attendees can take the opportunity to receive a complimentary professional portrait at the ECS Career Expo. No appointment necessary.



Resume Review

Booth: 501

Instructors: John Susko & Michel Fouré
Tuesday & Wednesday 1400-1800h

Bring your resume for a one-on-one session with an industry leader and expert on resume development. You will walk away with a resume that is sure to land you your next interview. To sign-up for a resume review appointment, you must first attend the Essential Elements for Employment Success; registration for a resume review occurs during the Essential Elements for Employment Success workshop. Appointments are 20-minutes in length.

**You must register for Essential Elements for Employment Success in order to participate.*

Are you missing out on something?

Experience clarify like never before! Arbin's new Laboratory Battery Test equipment allows you to uncover battery trends that may be overlooked using traditional test equipment.

Industry leading measurement resolution, measurement precision, and timekeeping can lead to new discoveries, and can shorten the time required to bring new technology to market. Innovative science demands the best instrumentation

— ARBIN TESTER
— TRADITIONAL TESTER

BOOTH 210

Arbin
POWERING INNOVATION
arbin.com | 1 979.690.2751

Get Involved!

ECS Annual Business Meeting and Luncheon

Tuesday, May 15

Purchase tickets when you register:

	Early bird	Regular	Onsite
Member	\$35	\$45	\$55
Fellow	\$25	\$35	\$45
Nonmember	\$45	\$55	\$65

This luncheon will also feature a special talk titled, "Electrochemistry & the Electrification of Everything in the Era of Low Cost Renewable Energy" by David Danielson, *Managing Director of the Breakthrough Energy Coalition.*

www.electrochem.org/233



Stop by booth #203 for a chance to win ZView, the world's most popular EIS data analysis software!

ZView® & ZPlot®, the 1st commercial Electrochemical Impedance Spectroscopy measurement & analysis tools.

Here since the beginning & still going strong.

Celebrating 30 years of being awesome!



Plenary & Society Awards

The Plenary Session

Monday, 1700-1800h
Ballroom 6E (WSCC)

Come together with participants from every symposium for the Plenary Session and recognize, honor, and listen to some of the greatest minds in the field. Join ECS President Johna Leddy as she congratulates distinguished Society award winners Hariklia (Lili)

Deligianni, and Ralph E. White, also honors the many Divisional award winners, and finally welcomes Miguel Nicolelis to give his ECS Lecture on “Linking Brains to Machines: From Basic Science to Neurological Neurorehabilitation”.

The ECS Lecture

Linking Brains to Machines: From Basic Science to Neurological Neurorehabilitation by Miguel Nicolelis



MIGUEL NICOLELIS, MD, PhD, is the Duke School of Medicine Distinguished Professor of Neuroscience at Duke University, Professor of Neurobiology, Biomedical Engineering, Neurology, Neurosurgery and Psychology and Neuroscience, and founder of Duke’s Center for Neuroengineering. He is founder and scientific director of the Edmond and Lily Safra International Institute for Neuroscience of Natal. Nicolelis is also

founder of the Walk Again Project, an international consortium of scientists and engineers, dedicated to the development of an exoskeleton device to assist severely paralyzed patients in regaining full body mobility.

Nicolelis has dedicated his career to investigating how the brains of freely behaving animals encode sensory and motor information. As a result of his studies, Nicolelis was first to propose and demonstrate that animals and human subjects can utilize their electrical brain activity to directly control neuroprosthetic devices via brain-machine interfaces (BMI).

Over the past 25 years, Nicolelis pioneered and perfected the development of a new neurophysiological method, known today as

chronic, multi-site, multi-electrode recordings. Using this approach in a variety of animal species, as well as in intra-operative procedures in human patients, Nicolelis launched a new field of investigation, which aims at measuring the concurrent activity and interactions of large populations of single neurons throughout the brain. Through his work, Nicolelis has discovered a series of key physiological principles that govern the operation of mammalian brain circuits.

Nicolelis’ pioneering BMI studies have become extremely influential since they offer potential new therapies for patients suffering from severe levels of paralysis, Parkinson’s disease, and epilepsy. Today, numerous neuroscience laboratories in the U.S., Europe, Asia, and Latin America have incorporated Nicolelis’ experimental paradigm to study a variety of mammalian neuronal systems. His research has influenced basic and applied research in computer science, robotics, and biomedical engineering.

Nicolelis is a member of the French and Brazilian Academies of Science and has authored over 200 manuscripts, edited numerous books and special journal publications, and holds three U.S. patents. He is the author of *Beyond Boundaries: The New Neuroscience of Connecting Brains with Machines and How It Will Change Our Lives*; and co-authored *The Relativistic Brain: How it Works and Why it Cannot be Simulated by a Turing Machine*.

Society Awards

Vittorio de Nora Award

Wednesday 1400h
303 (WSCC)

New Tools for Brain Research by Hariklia (Lili) Deligianni



HARIKLIA (LILI) DELIGIANNI is a research scientist in IBM’s Thomas J. Watson Research Center. Her current research interests include materials and devices for power electronics, bioelectronics, biosensors, and brain inspired computing.

Deligianni has played a key role developing the solder bump technology that became the standard for joining of silicon chips to packages. She co-invented

copper electrodeposition for on-chip interconnects and was a co-recipient of the 2006 Inventor of the Year Award from the New York Intellectual Property Law Association. For these technologies, IBM was recognized with the U.S. National Medal of Technology and Innovation. She has developed an electrodeposition route for the synthesis of solar thin film semiconductors and earth abundant solar materials and has been instrumental in the scale-up of thin film solar energy conversion technologies.

Deligianni holds PhD and MS degrees in chemical engineering from the University of Illinois in Urbana-Champaign and a BS in chemical engineering from Aristotelion University in Thessaloniki, Greece. She has also co-authored 58 manuscripts, 187 patents, and has more than 30 patents pending with the USPTO. Deligianni is a member of the IBM Academy of Technology, and a Fellow of The Electrochemical Society. In 2012, Deligianni was the first female recipient of the ECS Electrodeposition Research Award. She is a past secretary of ECS (2012-2016), has served as chair of the ECS Education and Ways and Means Committees, and of the Electrodeposition Division. She is a senior member of IEEE and of AIChE, and a member of ISE, ACS, ACM and AAAS.

Society & Division Awards

Henry B. Linford Award for Distinguished Teaching

Tuesday 0955h
604 (WSCC)

Mathematical Modeling of Batteries by Ralph E. White



RALPH E. WHITE is a Professor of Chemical Engineering and a Distinguished Scientist at the University of South Carolina. He graduated from the University of South Carolina with a BS in chemical engineering in 1971. He then attended the University of California at Berkeley and completed his PhD in 1977 under the direction of Prof. John Newman.

White began his teaching career at Texas A&M University in 1977. In 1993 he moved to the University of South Carolina where he served as the chair of the Department of Chemical Engineering for seven years, and then as the Dean of the College of Engineering and Computing for five years. In 1995 he founded the Center for Electrochemical Engineering.

White has published 338 peer-reviewed journal articles and has graduated 50 PhD and 39 MS students. He is a past treasurer of ECS (1990-1994), and he is a fellow of ECS, the American Institute of Chemical Engineers, and AAAS. White has received several international awards including the AESF Scientific Achievement Award (2000) for mathematical modeling of the electrodeposition of alloys, ECS Olin Palladium Award (2013) for contributions to science of electrochemistry, and the ECS Vittorio de Nora Award (2016). He has served as a consultant to several major companies including Energizer and General Electric.

Division Awards

Electronics and Photonics Division Award

Monday 0800h
213 (WSCC)

Technological Issues and Design Rules of Electrodes for High-Efficiency GaN-Based Light-Emitting Diodes by Tae-Yeon Seong



TAE-YEON SEONG received his PhD degree in materials science from the University of Oxford in 1992. After two years as a postdoctoral fellow, he joined the Gwangju Institute of Science and Technology where he served as department chair and director for the Brain Korea 21 Centre for Advanced Materials.

In 2005, Seong moved to the Department of Materials Science and Engineering at Korea University where he served as department chair and director for Brain Korea 21 Centre for Advanced Device Materials (2011-2016). He also served as Associate Dean of Research in the university's College of Engineering (2014-2015). Seong was president of the Korea Society of Optoelectronics in 2014. He was also an advisory committee member of the Ministry of Education of Korea (2005-2008). His current research interests include integration of HEMT (TFT) and μ -LEDs, LEDs for general illumination, displays, and biomedical applications.

Seong has authored and co-authored approximately 430 papers and holds 230 patents issued or pending. He is a fellow of ECS, the Institute of Physics (UK), and SPIE. He is a life member of ECS and served as an editorial advisory committee member for the ECS Journal of Solid State Science and Technology and ECS Solid State Letters.

Energy Technology Division Research Award

Monday 1400h
611 (WSCC)

Hydroxide Exchange Membrane Fuel Cells for Affordable Zero-Emission Cars by Yushan Yan



YUSHAN YAN joined the University of Delaware (UD) as the Distinguished Engineering Professor in the Department of Chemical and Biomolecular Engineering in 2011. He became the Founding Associate Dean for Research and Entrepreneurship in 2014. Before joining UD, he held the positions of Department Chair at the University of California Riverside (UCR) and senior staff engineer at Allied Signal.

His recognitions include the Nanoscale Science and Engineering Forum Award from the American Institute of Chemical Engineers, Donald Breck Award from the International Zeolite Association, Fellow of the American Association for the Advancement of Science, University of California Presidential Chair, and the inaugural UCR University Scholar. He has been an inventor on over 20 issued or pending patents. His research has led to more than 200 widely cited publications and extensive news coverage.

Yan earned a BA in chemical physics at the University of Science and Technology of China, studied heterogeneous catalysis at the Dalian Institute of Chemical Physics of the Chinese Academy of Sciences, and earned a doctoral degree in Chemical Engineering at the California Institute of Technology.

(continued on next page)

Division Awards

Energy Technology Division Supramaniam Srinivasan Young Investigator Award

Wednesday 1720h
603 (WSCC)

Enhanced Oxygen Electrocatalysis By Means of Electronic and Geometric Effects by María Escudero-Escribano



MARÍA ESCUDERO ESCRIBANO studied chemical engineering at the University of Extremadura in Spain. She obtained her PhD in electrocatalysis and surface nanostructuring from the Autonomous University of Madrid in 2011, supervised by Angel Cuesta. Her PhD was conferred with the “best PhD in chemistry in the region of Madrid” by the Spanish Royal Society of Chemistry (RSEQ) and “best PhD thesis related to hydrogen energy and fuel cells” by the Spanish Hydrogen Association and Spanish Association of Fuel Cells.

In 2012, she started her postdoctoral research with Ib Chorkendorff at Danmarks Tekniske Universitet. In 2014, she was awarded the Sapere Aude: Research Talent Grant, from the Danish Council for Independent Research. Thanks to this grant, she spent two years in Thomas Jaramillo’s group at Stanford University.

Since March 2017, Escudero-Escribano is an assistant professor at the Department of Chemistry at the University of Copenhagen, where she leads the NanoElectrocatalysis group. Her research has been recognized by numerous awards for young researchers, including the European Young Chemist Award (2016) and the CIDETEC Award (2016).

Energy Technology Division Graduate Student Award sponsored by Bio-Logic

Wednesday, 0820h
608 (WSCC)

Understanding Crosstalks in Li-Ion Cells by Deijun Xiong



DEIJUN XIONG completed his PhD in chemistry at Dalhousie University in October, 2017 under the supervision of Jeff Dahn.

During his PhD, he mainly focused on understanding the failure of high voltage $\text{LiNi}_x\text{Mn}_y\text{Co}_{(1-x-y)}\text{O}_2$ (NMC) cells and developing functional electrolyte for high voltage NMC cells. He put forward a novel “pouch bag” method to deepen understanding of the crosstalks occurring in Li-ion cells. He provided new support that oxygen can be released from charged polycrystalline NMC materials rather than single crystal NMC materials at mild temperature at high voltage. He also made contributions to develop ethylene carbonate-free electrolytes for high voltage NMC cells.

In December 2017, Deijun joined Shenzhen Capchem Technology Co. Ltd (one of the leading Li-ion battery and supercapacitor electrolyte companies in the world) as vice director of research and development to develop functional electrolytes for Li-ion battery and supercapacitor.

IE&EE Division H. H. Dow Memorial Student Achievement Award

Wednesday 0800h
608 (WSCC)

Understanding the Mn-Based Oxide Electrode Materials and Beyond from First Principles and Experiment by Soo Kim



SOO KIM received his PhD in materials science and engineering at Northwestern University in 2017 specializing in research and development of advanced battery materials. He received his BSE in chemical engineering at the University of Michigan in Ann Arbor in 2008 and MS in chemical engineering at Carnegie Mellon University in 2009.

Before pursuing a doctorate degree in computational materials research, he worked at Samsung to develop Li-ion battery cathodes at industrial-scale (2010-2011), and as a staff scientist at the Korea Institute of Science and Technology with Drs. Byung-Won Cho and Kyung Yoon Chung (2011-2013) to experimentally synthesize more advanced cathode materials.

Kim has co-authored over 30 patents and peer-reviewed journal papers, and has been a recipient of multiple awards including the ECS Edward G. Weston Summer Research Fellowship (2016), Northwestern Computational Research Day Poster Competition Award (2016), ECS Battery Division Travel Grant (2014), and Fifty for the Future Award from Illinois Technology Foundation (2013). Kim is currently a postdoctoral researcher at the Massachusetts Institute of Technology and is supervised by Prof. Yang Shao-Horn. He is concentrating on the synthesis in conjunction with performing density functional theory calculations to design functional materials for electrochemical energy conversion and storage applications.

IE&EE Division Student Achievement Award

Sunday 1330h
607 (WSCC)

Mitigating Ionic and Water Transport through Polymeric Membranes in All-Vanadium Redox Flow Batteries Via Design, Engineering, and Prototyping Novel Asymmetric Cell Topologies by Yasser Ashraf Gandomi



YASSER ASHRAF GANDOMI is currently a PhD candidate at the University of Tennessee, Knoxville (UTK) and a member of the Electrochemical Energy Storage and Conversion Laboratory. He also received his MS in mechanical engineering with a minor in computational sciences from UTK. He holds BS and MS degrees in mechanical engineering from the University of Tabriz.

Ashraf Gandomi has worked on multiple projects funded by the Department of Energy and industry. His research has focused on the design, engineering, modeling, and prototyping of electrochemical conversion devices including redox flow batteries, polymer electrolyte fuel cells, and electrochemical sensors.

His accomplishments have been recognized via several institutional awards at UTK. Ashraf Gandomi also won a best presentation award at the Fifth International Education Forum on Environmental and Energy Science in 2016. He is the recipient of

Division Awards

a University of Tennessee Chancellor's Graduate Fellowship and an IAHE Fellowship. He plans to continue in academia after graduation and expand the advances made in his doctoral studies to such broadly-impactful technologies as water desalination, energy storage and conversion, and related electrochemical devices.

Nanocarbons Division SES Young Investigator Award

Monday 1400h
201 (WSSC)

Bottom-up Synthesis of Semiconducting Graphene Nanoribbons via CVD by Michael Arnold



MICHAEL S. ARNOLD is currently Professor of Materials Science and Engineering at the University of Wisconsin-Madison. There, he has directed the Advanced Materials for Energy and Electronics Group since 2008.

Arnold graduated summa cum laude from the University of Illinois at Urbana-Champaign with a BS in electrical engineering in 2001. He earned his PhD in 2006 from Northwestern University in materials science and engineering under Professors Mark Hersam and Sam Stupp. He conducted postdoctoral research at the University of Michigan at Ann Arbor from 2006-2008 with Professor Stephen Forrest.

Arnold has been a recipient of various awards throughout his career including the National Science Foundation CAREER Award (2014) and the American Chemical Society's Arthur K. Doolittle Award (2012). His work addresses fundamental challenges – in controlling the growth, processing, ordering, and heterogeneity of nanomaterials and in understanding phenomena beyond the scale of single nanostructures – that must be overcome to exploit nanomaterials in technology. Arnold's research has resulted in 95 journal publications and 15 patents/patent applications.

Organic and Biological Electrochemistry Division Manuel M. Baizer Award

Monday 0800h
616 (WSSC)

Molecular Electrochemistry of Fragile and Soft Molecular Systems by Flavio Maran



FLAVIO MARAN is Professor of Physical Chemistry in the Department of Chemistry at the University of Padova, where he leads the Molecular Electrochemistry and Nanosystems Group. He obtained his PhD in chemistry at the University of Padova in 1980. Maran has been visiting scientist and professor at the National Research Council of Canada, University of Western Ontario, Université de Sherbrooke, Utah State

University, University of La Laguna, Temple University, Princeton University, Okayama University, and Kyoto University.

Maran is a fellow of the Japan Society for the Promotion of Science and is the recipient of the 2014 Jaroslav Heyrovsky Prize for Molecular Electrochemistry awarded by the International Society of Electrochemistry (ISE). He is on the editorial board or acts as section editor of various scientific journals and is a regular organizer of ECS and ISE symposia. His mentor was the late Elio Vianello, one of the fathers of molecular electrochemistry.

Maran has always been an advocate of the molecular approach to address scientific problems and thus of the importance of explaining the fine details of electrochemical processes on a true molecular basis. His research focuses on molecular and organic electrochemistry, monolayer-protected gold clusters, electron-transfer reactions, monolayers and biomimetic membranes on electrodes, and electrochemical biosensors.

JOIN US AT THE PLENARY
TO CELEBRATE ROQUE CALVO'S LEGACY
37 YEARS OF SERVICE

ROQUE CALVO, ECS EXECUTIVE DIRECTOR/CEO

Exhibitors

Technical Exhibit

Thank you to the 233rd ECS Meeting Exhibitors!

The exhibitors in Seattle, WA will showcase some of the greatest innovations in the industry including cutting-edge instruments, materials, systems, publications, and software, as well as other products and services. Don't miss the opportunity to gain face to face time with industry experts.

Location

The Exhibit Hall will be located in **Ballroom 6ABC** in the Washington State Convention Center

Exhibit Hours

Monday, May 14, 2018

1200-1700h Exhibitor Move-In
1400-1800h Poster Move-In
1800-2000h Technical Exhibit, General and Poster Session

Tuesday, May 15, 2018

1400-2000h Technical Exhibit
1400- 1800h Poster Move-In
1530-1600h Networking Break
1800-2000h General Poster Session

Wednesday, May 16, 2018

1400-2000h Technical Exhibit
1400- 1800h Poster Move-In
1530-1600h Networking Break
1800-2000h General Poster Session
2000-2200h Optional Technical Exhibit Tear Down

Thursday May 17, 2018

0900-1200h Technical Exhibit Tear Down

Exhibitors

Admiral Instruments

Booth: 309

Mark Sholin
mark@admiralinstruments.com
2345 E Thomas Rd
Suite 285
Phoenix, AZ, 85016
USA



1.480.256.8706
www.admiralinstruments.com

Admiral Instruments is a potentiostat design and manufacturing company based in the USA. We offer a growing selection of electrochemistry instruments including the modestly-priced, easy-to-use family of Squidstat™ potentiostats and the entire collection of high-performance workstations from Zahner Scientific Instruments.

Our wide variety of products are uniquely positioned to satisfy those with limited budgets or those seeking highly precise and specialized measurement capabilities, including challenging multi-sine EIS and equivalent circuit modeling. Visit our booth to try the recently launched Squidstat Plus potentiostat priced at \$4,900, featuring a +/-1 A maximum current and EIS up to 1 MHz.

ALS Co., LTD

Booth: 302

Katsunobu Yamamoto
yamamoto@bas.co.jp
1-28-12 Mukojima
Sumida-ku, Tokyo, 131-0033
Japan



+1.81.3.3624.0331
www.als-japan.com

ALS provides researchers with a wide range of products for electrochemistry and spectroelectrochemistry applications, including Bi-Potentiostat (Model 2325), Ring-Disk Electrode apparatus (RRDE-3A), Spectrometer Systems (SEC2020) and Faraday cage (CS-3A). We also dealing with various kinds of Spectroelectrochemical cells (SEC-C/SEC-2F), Quartz Crystal Microbalances cell/Quartz crystal (QCMT/EQCMT) and Electrodes/Accessories for EC measurement same as their related items.

Arbin Instruments

Booth: 210

Richard Rogers
richard@arbin.com
762 Peach Creek Cut Off Road
College Station, TX, 77845
USA



1.979.690.2751
www.Arbin.com

Arbin Instruments manufactures multi-channel testing instruments for electrochemistry, battery, supercapacitor, and flow battery applications. We offer **high-precision** instruments using technology developed from an APRA-E grant along with leading industry partners.

Technical Exhibit

ASME Publishing

Literature Display New Exhibitor!

Wilson K. S. Chiu, PhD
wchiu@engr.uconn.edu
2 Park Avenue, 6th Floor 1.212.591.8078
New York, NY 10016-5990 www.Asmedigitalcollection.asme.org



ASME publishes some of the most prestigious engineering journals in the world as one way to fulfill its ongoing mission of being an essential resource for professionals seeking engineering solutions to global challenges. The ASME Digital Collection provides unparalleled depth, breadth, and quality of peer-reviewed content with powerful search tools that retrieve content simultaneously from journals (1960 to present), conference proceedings (2000 to present), and eBooks (1993 to present).

BASi

Booth: 201

James Hill
jhill@BASinc.com
2701 Kent Ave.
West Lafayette, IN, 47906 1.765.476.9888
USA www.BASinc.com



For over 40 years BASi has been manufacturing electrochemistry laboratory equipment and is recognized globally for expertise in electroanalytical chemistry. BASi, Bioanalytical Systems Inc., manufactures instrumentation in West Lafayette, Indiana and provides contract research services for the pharmaceutical industry.

Bio-Logic USA

Booths: 101, 103 and 105

David Carey
david.carey@bio-logic.us
9050 Executive Park Drive, Suite 100C
Knoxville, TN 37923 1.865.769.3800
USA www.bio-logic.net



Bio-Logic is the exclusive provider of EC-Lab electrochemical instruments. The EC-Lab family of products includes modular single-channel (SP-50/150/200/300) and multi-channel (VSP/VMP3/VSP-300/VMP-300) potentiostats/galvanostats, High current potentiostats (HCP-803/1005) and easy to use software. Additionally, Bio-Logic offers a complete line of electrochemical accessories, including cells, electrodes, and ancillary instruments. Bio-Logic is also the provider of BT-Lab line of battery cyclers (MPG-2xx and BCS-8XX families), the SCAN-Lab line of localized electrochemical scanning systems (M370 and M470 modular systems), and the MT-Lab materials analysis systems (MTZ-35 FRA and high temperature sample holder). Come to booths 101, 103 and 105 to see our exciting showcase of products.

Bruker Optics

Booth: 404

Sergey Shilov
Info.bopt.us@bruker.com
40 Manning Rd.
Billerica, MA, 01821 1.978.439.9899
USA www.bruker.com



Bruker Optics offers Infrared, Near Infrared and Raman spectrometers which fit a wide range of applications. The combination of FT-IR spectroscopy with the electrochemistry provides information about molecular change during electrochemical reactions in an addition to the electrochemical response of the studied material. Visit us in Booth #404 and at www.bruker.com/optics.

De Nora

Booth: 411

Vivek S. Murthi
vivek.murthi@denora.com
7590 Discovery Lane
Painesville, OH 44077
USA www.denora.com



De Nora is the largest electrode supplier for electrochemical applications in the world. We are the largest manufacturer of insoluble electrodes for applications such as Chlor-Alkali, Surface Finishing, Water Treatment and Cathodic Protection. Our coated titanium electrode technology provides significant performance and lifetime advantages in many red-ox flow batteries. As the owner of E-Tek® gas diffusion electrode (GDE) technology, we have a wide variety of catalysts and gas diffusion electrodes for many fuel cell technologies. Come talk to us about your applications!

Dioxide Materials

Booth: 402

Maria Gainer
Maria.gainer@dioxidematerials.com
3998 FAU Blvd. Suite 300
Boca Raton, FL, 33431 1.217.239-1400
USA www.dioxidematerials.com



Dioxide Materials™ is displaying Sustainion™ anion exchange membranes enabling alkaline water electrolyzers with up to 2.3 A/cm² current at 2.0 V with base metal catalysts and 60 C, CO₂ electrolyzers with up to 280 mA/cm² at 3 V and room temperature. Research grade anion exchange membrane water electrolyzers, new PTFE Supported Sustainion®37-50 Alkaline Exchange Membranes with reinforced support for easier handling and better mechanical strength, electrodes and catalysts also available.

The Electrochemical Society

Booth: 401, 500

Ashley Moran, ECS Corporate Programs Manager
Ashley.Moran@electrochem.org
65 South Main Street, Building D
Pennington, New Jersey 08534-2839 1.609.737.1902
USA www.electrochem.org



As a leader since 1902, The Electrochemical Society strives to advance theory and practice at the forefront of electrochemical and solid state science and technology, and allied subjects. ECS encourages research, discussion, critical assessment, and the dissemination of knowledge in these fields by holding Society meetings, publishing scientific papers, fostering training and education of scientists and engineers, and through cooperation with other organizations promoting science and technology in the public interest. ECS engages more than 8,000 individual and institutional members in over 75 countries.

Stop by our booth and become a member!

(continued on next page)

(continued from previous page)

FUJIFILM Dimatix, Inc.

Literature Display

Eunice Wang
ewang@dimatix.com
2250 Martin Avenue
Santa Clara, California 95050
USA

1.408.565.0670
www.dimatix.com



Inkjet printing allows creation of products like DNA arrays, electronics, displays and solar cells. The DMP-2850 is designed for micro-precision jetting a variety of functional fluids onto virtually any surface and minimizes waste of expensive fluid materials, thereby eliminating the cost and complexity associated with traditional product development and prototyping.

Furuya Metal Americas, Inc.

Booth: 315

New Exhibitor!

Takuya Nakamura
nakamura@furuya-ma.com
250 Commercial Street
Ste 34012
Manchester, NH 03101
USA

1.603.518.7723
www.furuya-ma.com



Furuya Metal has been supplying Electrocatalysts for PEM-Water Electrolysis, OER catalysts for FC, etc. Furuya also provides Coating Services to coat any materials on micron - nano size Powders for material development of All Solid State Battery. Please come see us for details.

Gamry Instruments

Booths: 301, 400

Jerome Babauta
jbabauta@gamry.com
734 Louis Dr.
Warminster, PA, 18974
USA

1.215.682.9330
www.gamry.com



Potentiostats, Multichannel Potentiostats, Quartz Crystal Microbalance and Electrochemical Accessories, Cyclic Voltammetry, Electrochemical Impedance Spectroscopy, Cyclic Charge/Discharge, Chronoamperometry, **Gamry Instruments** designs and manufactures high-quality electrochemical instrumentation and accessories. Our full lineup includes single and multichannel potentiostats from 600 mA to 30 A all capable of EIS, IMPS/IMVS, and a quartz crystal microbalance.

Gelest, Inc.

Literature Display

Gabrielle Lockwood
glockwood@gelest.com
11 E. Steel Rd.
Morrisville, PA 19067
USA

1.215.547.1015
www.gelest.com



Gelest, Inc., headquartered in Morrisville, Pennsylvania, is recognized worldwide as an innovator, manufacturer and supplier of commercial and research quantities of organosilicon compounds, metal-organic compounds and silicones. Gelest serves advanced technology markets through a materials science-driven approach. The company provides focused technical development and application support for semiconductors, optical materials, pharmaceutical synthesis, diagnostics and separation science, and specialty polymeric materials: "Gelest – Enabling Your Technology."

Hidden Analytical, Inc.

Booth: 202

Mark Buckley
info@HiddenInc.com
37699 Schoolcraft Road
Livonia
MI 48150
USA

Tel: 1.734.542.6666
Toll Free: 1.888.96.HIDEN
Fax: 1.734.542.6030
www.HiddenInc.com



High performance mass spectrometers for precision gas analysis, surface science applications, plasma characterization and vacuum diagnostics.

Showcasing systems for electrochemistry research, DEMS, reaction kinetics and surface science. Our HPR Series provides for fast response in situ determination of gaseous and volatile electrochemical reactants, reaction intermediates and products in real time.

Hummingbird Scientific

Booth: 212

New Exhibitor!

Daan Hein Alsem
daan_alsem@hummingbirdscientific.com
2610 Willamette Dr. NE, Ste A
Lacey, WA 98516
USA

1.360.252.2737 x 104
www.hummingbirdscientific.com



Hummingbird Scientific builds products for electron and ion microscopy with an emphasis on transmission electron microscopes (TEM). In close collaboration with our customers, we design and manufacture all aspects of these complex systems from mechanical, electrical, and software design to fabrication and assembly. We aim to provide pioneering solutions for applications in nanotechnology, materials science, and biology.

IKA Works

Booth: 204

New Exhibitor!

Troy Rodriguez
troy.rodriguez@ika.net
2635 Northchase Pkwy SE
Wilmington, NC 28405
USA

1.910.452.7059 x 272
www.ika.com



IKA laboratory technology offers a wide range of innovative equipment for numerous applications in research and development. Market leaders trust in our proven technology for their mixing, heating, distilling and crushing applications.

Ionomr Innovations Inc.

Booth: 408

Benjamin Britton
info@ionomr.com
Suite 1200 - 555 West Hastings St.
Vancouver, BC V6B 4N6
Canada

1.403.466.3367
www.ionomr.com



Ionomr designs, adapts, and manufactures ion exchange membranes and ionomer solutions for energy storage, clean energy generation and water treatment applications. Our core technology is the most alkaline stable and versatile high-performance anion-exchange membrane on the market — backed by outstanding quality assurance & consistency.

Exhibitors

Technical Exhibit

Ivium Technologies B.V.

Booth: 305

Ross Archer
info@ivium.com
De Zaale 11
Eindhoven, 5612AJ
Netherlands



+31.40-2390606
US tel: 1.800.701.4405
www.ivium.com

Ivium Technologies develops electrochemical instrumentation for all applications. We have our high end 24bit resolution portable CompactStat and allround IviumStat potentiostats for the most demanding experiments. For labs on a budget we have our Vertex potentiostat range, including our Vertex.One (also ideal for educational purposes). Our handheld pocketSTAT is designed for portability; for multichannel applications and for example battery testing, we have our versatile Ivium-n-Stat and our rack mountable OctoStat series. Various modules and power boosters are available.

Maccor, INC.

Booth: 414

Mark Hulse
m.hulse@maccor.com
4322 S 49th W Ave
Tulsa, OK 74107
USA



1.918.445.1496
www.maccor.com

Maccor manufactures testing equipment for the battery and energy storage market (i.e. batteries, capacitors, fuel cells, etc.). Maccor Inc. was the pioneer, and is the world's largest commercial manufacturer for this type of equipment. More companies rely on Maccor everyday for their battery and cell test equipment needs. Today Maccor has thousands of systems in operation in more than 50 countries.

Metrohm

Booths: 410, 412

Karen Poe
kpoe@metrohmusa.com
9250 Camden Field Parkway
Riverview, FL, 33578
USA



1.813.316.4757
www.metrohm.com

Metrohm Electrochemistry supports high-impact research in electrocatalysis, energy, sensors, corrosion, bioelectrochemistry, and other interfacial processes. Our modular Autolab and portable DropSens instruments and accessories can easily grow with the demands of your projects. Options include EIS, low currents, analog sweeps, bipotentiostats, fast scanning, and various cells and electrodes including screen-printed electrodes.

MTI Corporation

Booth: 200

Andy Huang
andy@mtixtl.com
860 South 19th Street
Richmond, CA 94840
USA



1.510.525.4705
www.mtixtl.com

MTI Corporation has been providing a total solution for material research since 1995. MTI supplies crystal, ceramic, metallic substrates from A-Z and nano-powder. MTI provides laboratory battery R&D equipment including the entire coin cell, pouch cell, and cylinder cell pilot lines, Beyond Li-ion batteries research equipment, split testing cells and battery safety testing equipment. Moreover, MTI also offers the mixing, cutting, polishing, lapping, and pressing machines as well as the furnaces glove boxes, high vacuum system, high-pressure furnaces for battery and energy materials research sample preparation.

Neware Technology Limited

Booth: 502**New Exhibitor!**

David Chen
chendawei@neware.com.cn
22C, YHC Tower, No. 1 Sheug Yuet Road
Kowloon, Hong Kong
China



+86.13923782832
www.newaretechnology.com

Neware is a leading battery testing system provider located in Shenzhen, China. Neware has been committed to providing high performance battery testing system since 1998. Through 2 decades innovation, Neware has provided more than 160,000 systems for about 26,000 clients worldwide.

OrigaLys Electrochem SAS

Booth: 510**New Exhibitor!**

Mr. Dussaut Frederic
frederic.dussaut@origalys.com
Les Vercheres 2, 1er Etage
62 A avenue de l'Europe
Rillieux-la-Pape 69140
France



+33.6.1689.0609
+33.9.7264.7851
www.origalys.com

OrigaLys was founded in 2010 in France, by R&D Engineers from Tacussel and Radiometer Analytical. With 30 years' knowledge in electrochemistry and a worldwide distributor network, we provide: Potentiostat, Galvanostat, Impedancemeter, Multi-Channels, Rotating Disk Electrode, Software, Electrodes and Accessories (tips, pellets, corrosion cells). All our products are **MADE IN FRANCE**.

(continued on next page)

(continued from previous page)

Park Systems, Inc.

Booth: 300

Gerald Pascual
gerald@parkafm.com
3040 Olcott Street
Santa Clara, CA 95054
USA



www.parkafm.com

Park Systems is a world leading manufacturer of atomic force microscopy (AFM) systems with a complete range of products for researchers and industry engineers in biological science, materials research, semiconductor, and storage industries. Park's AFM provides the highest data accuracy, superior productivity, and lowest operating cost.

PAR/Solartron

Booths: 311, 313

Rob Sides
Rob.Sides@ametek.com
801 South Illinois Ave.
Oak Ridge, TN 37830
USA



1.865.483.2122
www.ameteksi.com

Princeton Applied Research is a leading manufacturer of laboratory instruments utilized for investigations in the field of electrochemistry, which includes batteries, fuel cells, corrosion, sensors and general physical chemistry. In business more than 50 years, we offer customers the benefit of knowledge, expertise, products, and solutions to support their particular research interest. Solartron Analytical is the global leader in Electrochemical Impedance Spectroscopy, providing more than 70 years of instrumentation development expertise for materials and electrochemical research. Solartron Analytical instruments and accessories are advancing the research into the physical and electrochemical properties of batteries, fuel cells, organic coatings, corrosion inhibitors, and sensors, as well as the characterization of materials for dielectrics, solar cells, display technologies, ferroelectrics, and composites.

Pine Research Instrumentation

Booths: 109, 1119 and 208

Dr. Tim Paschkewitz
pinewire@pineresearch.com
2741 Campus Walk Ave., Bldg 100
Durham, NC, 27705
USA



www.pineresearch.com

Pine Research Instrumentation, located in Durham, NC, manufactures a full line of affordable, durable and reliable electrochemical research equipment. Pine offers benchtop bipotentiostat/galvanostat instruments as well as portable USB potentiostat systems, all of which are controlled using our powerful AfterMath software package. We offer unique quartz electrochemical cells for photoelectrochemistry and spectroelectrochemistry, and we are the world leader in rotating disk, ring-disk, and cylinder electrode instrumentation. Our line of compact voltammetry cells, featuring screen-printed patterned electrodes, provides a quick and easy way to perform routine electrochemical measurements.

Quantachrome Instruments

Booth: 113

qc.sales@quantachrome.com
1900 Corporate Drive
Boynton Beach, FL 33442
USA



1.561.731.4999
www.quantachrome.com

For over 49 years, **Quantachrome** has designed revolutionary analytical instruments for material characterization laboratories. Our instrumentation is used in leading industrial and research laboratories to measure the surface area, density, pore volume, and pore size distribution within ceramic powders and porous materials.

Scribner Associates, Inc.

Booth: 203

Marion Jones
marion@scribner.com
150 E Connecticut Ave.
Southern Pines, NC 28387
USA



1.910.695.8884
www.scribner.com

Scribner Associates specializes in advanced analytical hardware and software for electrochemical research and development. Our software packages such as ZPlot®, ZView®, MultiStat® and CorrWare® are recognized world-wide as the gold standard for instrument control and data analysis. On display will be the CE certified Model 850e Fuel Cell Test System, a turn-key instrument for PEM, DMFC and SOFC R&D. The 850e features multiple current ranges for high accuracy over a wide dynamic range, automated humidifier bypass valves for wet/dry cycling, automatic humidifier water fill, manual or automated inlet selector valves, integrated potentiostat functions, and accurate dew point control up to 5 SLM. Also on display will be the Model 585 8-Channel Battery Cycler. The 585 is specifically designed for battery and capacitor discharge cycling and offers CC, CV, CP, and CR modes, 6 current ranges up to 5A plus channel ganging to 20A, cell resistance by HFR, 6-wire terminal measurement, and comes with BCycle™ and BView® software for instrument control and data analysis. All of our products are available for quick delivery and are backed by comprehensive technical support.

Semilab SDI, LLC

Booth: 413

John Byrnes
John.byrnes@semilabusa.com
10770 N. 46Th ST.
STE. E700
Tampa, FL 33617
USA



1.813.977.2244
www.semilab.hu

Semilab is a leading metrology equipment supplier for characterization of semiconductor materials. The company offers advanced electrical and optical systems, for R&D and high volume production in the semiconductor, photovoltaic, and display technology markets. Technologies include measurements of contamination, dopant concentration, film thickness, 3D topography, CV/IV measurement of dielectrics, atomic force microscopy, and nanoindentation.

Exhibitors

Technical Exhibit

University of Washington- Washington Clean Energy Testbeds

Booth: 512

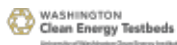
New Exhibitor!

Michael Pomfret
wcet@uw.edu

4625 Union Bay Place NE
Seattle, WA 98105
USA

1.206.685-6833

Wcet.washington.edu



The Washington Clean Energy Testbeds is a single-stop venue that offers open access to advanced capabilities for prototyping, testing, and demonstrating technology. The Testbeds are focused on scalable ultra-low-cost manufacturing of solar cells and electronic devices, next-generation battery devices and controls, and power system integration software and hardware challenges.

Vacuum Technology Inc.

Booth: 403

Sam Cai
info@vti-glovebox.com

15 Great Republic Drive Unit 4
Gloucester, MA 01930
USA

1.978.879.4302

www.vti-glovebox.com



Vacuum Technology Inc. builds and services gloveboxes for energy storage from button-cell batteries to supercapacitors. Our worldwide clients value our innovative & adaptive designs, best-in-class components, and exemplary customer service solutions for R&D, pilot production, boutique manufacturing, and mass-market energy products. Allow us to fulfill your engineering needs.

Xergy Inc.

Booth: 303

Jason Jin
jason.jin@xergyinc.com

299 Cluckey Drive
Harrington, DE 19952
USA

1.781.366-3222



XERGY Inc. is the world leader in development of advanced composite ion exchange membranes. XERGY designs, develops, manufactures, sells, and services a range of high performance devices, modules, stacks, and systems employing its XION Ion Exchange Membranes.



Are you interested in our
Advertising Opportunities?
Contact sponsorship@electrochem.org
for more information.

THE ELECTROCHEMICAL SOCIETY MONOGRAPH SERIES

The following volumes are sponsored by ECS,
and published by John Wiley & Sons, Inc.
Order your copy from the ECS Online Store today!

Electrochemical Impedance Spectroscopy (2nd Edition)

By Mark E. Orazem and Bernard Tribollet (2017)
768 pages, ISBN 978-1-118-52739-9

Atmospheric Corrosion (2nd Edition)

By C. Leygraf, I. Odnevall Wallinder, J. Tidblad,
and T. Graedel (2016)
400 pages, ISBN 978-1-118-76227-1

Molecular Modeling of Corrosion Processes: Scientific Development and Engineering Applications

Edited by C. D. Taylor and P. Marcus (2015)
272 pages, ISBN 978-1-118-26615-1

Electrochemical Power Sources: Batteries, Fuel Cells, and Supercapacitors

By V. S. Bagotsky, A. M. Skundin,
and Y. M. Volfkovich (2015)
400 pages, ISBN 978-1-118-46023-8

Modern Electroplating (5th Edition)

Edited by M. Schlesinger and M. Paunovic (2014)
736 pages, ISBN 978-0-470-16778-6

Lithium Batteries:

Advanced Technologies and Applications

Edited by B. Scrosati, K. M. Abraham,
W. A. van Schalkwijk, and J. Hassoun (2013)
392 pages, ISBN 978-1-118-18365-6

Fuel Cells: Problems and Solutions (2nd Edition)

By V. S. Bagotsky (2012)
406 pages, ISBN 978-1-118-08756-5

Uhlig's Corrosion Handbook (3rd Edition)

Edited by R. Winston Revie (2011)
1,296 pages, ISBN 978-0-470-08032-0

Fundamentals of Electrochemical Deposition (2nd Edition)

By M. Paunovic and M. Schlesinger (2006)
373 pages, ISBN 978-0-471-71221-3

Fundamentals of Electrochemistry (2nd Edition)

Edited by V. S. Bagotsky (2005)
752 pages, ISBN 978-0-471-70058-6

Electrochemical Systems (3rd Edition)

By J. Newman and K. E. Thomas-Alyea (2004)
672 pages, ISBN 978-0-471-47756-3

ECS Members will receive a discount.
See the ECS website for prices.

Visit the ECS Online Store

Sponsors

General Meeting Sponsors

Thank you to the 233rd Meeting Sponsors!

Gold



Silver



Bronze



Gelest

Enabling Your Technology

Metal-Organics

Materials & Chemical Development
Microelectronics & Optoelectronics
Biotechnology & Health Sciences
Displays & Optics

- High K Dielectrics
- Catalysts
- Surface Modification
- Conductive Oxides

**Ge, Sn, Pb, Ti, Zr,
Hf, Ta, Pt, Al**



GELEST, INC.
11 E. Steel Road
Morrisville, PA 19067
888-734-8344
215-547-1015
www.gelest.com



Sponsors

Symposia Sponsors

Thank you to the 233rd Symposium Sponsors!

Silver



Arbin Instruments

A01: Battery and Energy Technology
Joint General Session
A03: Li-ion Batteries and Beyond



Lam Research Corporation

D02: Plasma and Thermal Processes for
Materials Modification, Synthesis,
and Processing 2



Photon, Etc.

B02: Carbon Nanostructures
in Medicine and Biology



Sigma-Aldrich Materials Science

A03: Li-ion Batteries and Beyond
B04: Nanocarbons in Korea
B06: 2D Layered Materials: From Fundamental
Science to Applications

Bronze



Bio-Logic USA, LLC

A03: Li-ion Batteries and Beyond



Brookhaven National Laboratory

L02: Electrocatalysis 9: Symposium
in Honor of Radoslav Adzic



De Nora

I04: Materials for Low Temperature
Electrochemical Systems 4

Jiang Family Foundation

A03: Li-ion Batteries and Beyond



Scribner Associates, Inc.

I03: Oxygen or Hydrogen Evolution Catalysis
for Water Electrolysis 4

TOYOTA

Toyota

A03: Li-ion Batteries and Beyond

Contributing

Air Liquide

G01: Silicon Compatible Materials, Processes and Technologies for Advanced Integrated Circuits and Emerging Applications 8

CH Instruments, INC.

L02: Electrocatalysis 9: Symposium in Honor of Radoslav Adzic

L08: Electrochemically Assisted Fluorescence

Doosan Fuel Cell America

L02: Electrocatalysis 9: Symposium in Honor of Radoslav Adzic

Gamry Instruments

L02: Electrocatalysis 9: Symposium in Honor of Radoslav Adzic

IBM

G01: Silicon Compatible Materials, Processes and Technologies for Advanced Integrated Circuits and Emerging Applications 8

LC Technology Solutions Inc.

L06: Nanoporous Materials

Nextron Corporation

B04: Nanocarbons in Korea

Thermo Fisher Scientific

L06: Nanoporous Material

Quantachrome Instruments

L06: Nanoporous Material

Ion Power
EXPERTS IN NAFION™
The Premium Perfluorosulfonic Acid Polymer

Nafion™
Authorized Distributor of Nafion™,
a Brand of The Chemours Company

Full range of Nafion™ products:
www.NAFIONSTORE.com
EU: +49 8997007-170
US: +1 877-345-9198
sales@ion-power.com

Ion Power is a licensed distributor of Nafion™ by The Chemours Company

Journal of The Electrochemical Society (JES)

Editor: Robert Savinell

Technical Editors

Doron Aurbach, Batteries and Energy Storage
David Cliffler, Physical and Analytical Electrochemistry,
Electrocatalysis, and Photoelectrochemistry
Gerald S. Frankel, Corrosion Science and Technology
Thomas F. Fuller, Fuel Cells, Electrolyzers, and Energy Conversion
Charles L. Hussey, Electrochemical/Electroless Deposition
Janine Mauzeroll, Organic and Bioelectrochemistry
Rangachary Mukundan, Sensors
Venkat Subramanian, Electrochemical Engineering

Associate Editors

Thierry Brousse, Batteries and Energy Storage
Raymond J. Gorte, Fuel Cells, Electrolyzers, and Energy
Conversion
Takayuki Homma, Electrochemical/Electroless Deposition
Ajit Khosla, Sensors
Scott Lillard, Corrosion Science and Technology
Brett Lucht, Batteries and Energy Storage
Stephen Maldonado, Physical and Analytical Electrochemistry,
Electrocatalysis, and Photoelectrochemistry
Paul M. Natishan, Corrosion Science and Technology
Thomas J. Schmidt, Fuel Cells, Electrolyzers, and Energy
Conversion
Minhua Shao, Fuel Cells, Electrolyzers, and Energy Conversion
Venkat Srinivasan, Batteries and Energy Storage
Alice Suroviec, Physical and Analytical Electrochemistry,
Electrocatalysis, and Photoelectrochemistry
Nae-Lih (Nick) Wu, Batteries and Energy Storage

ECS Journal of Solid State Science and Technology (JSS)

Editor: Dennis Hess

Technical Editors

Jennifer A. Bardwell, Electronic Materials and Processing
Francis D'Souza, Carbon Nanostructures and Devices
Peter Mascher, Dielectric Science and Materials
Kailash C. Mishra, Luminescence and Display Materials, Devices,
and Processing
Fan Ren, Electronic and Photonic Devices and Systems

ECS Editorial Advisory Committee

S.V. Babu
Lane Baker
Mike Hickner
Sean King
Rainer Küngas
Ramchandra Pode
Anant Setlur

ECS Transactions (ECST)

Editor: Jeffrey W. Fergus

ECST Editorial Advisory Board

Christopher Johnson, Battery Division
Dev Chidambaram, Corrosion Division
Zhi (David) Chen, Dielectric Science and Technology Division
Stanko Brankovic, Electrodeposition Division
Robert Lynch, Electronics and Photonics Division
Cynthia Rice, Energy Technology Division
Cortney Kreller, High Temperature Materials Division
John Harb, Industrial Electrochemistry and Electrochemical
Engineering Division
Mikhail Brik, Luminescence and Display Materials Division
Slava Rotkin, Nanocarbons Division
James Burgess, Organic and Biological Electrochemistry Division
Petr Vanýsek, Physical and Analytical Electrochemistry Division
Dong-Joo Kim, Sensor Division

Interface

Editor: Krishnan Rajeshwar

Interface Advisory Board

Christopher Johnson, Battery Division
Masayuki Itagaki, Corrosion Division
Durga Misra, Dielectric Science and Technology Division
Philippe Vereecken, Electrodeposition Division
Jennifer Hite, Electronics and Photonics Division
Mani Manivannan, Energy Technology Division
Paul Gannon, High Temperature Materials Division
John Weidner, Industrial Electrochemistry & Electrochemical
Engineering Division
Uwe Happek, Luminescence and Display Materials Division
Slava Rotkin, Nanocarbons Division
James Burgess, Organic and Biological Electrochemistry Division
Andrew Hillier, Physical and Analytical Electrochemistry Division
Nianqiang (Nick) Wu, Sensor Division

ECS Community

ECS Division Officers

Battery

Christopher Johnson, *Chair*
Marca Doeff, *Vice Chair*
Shirley Meng, *Secretary*
Brett Lucht, *Treasurer*

Corrosion

Sannakaisa Virtanen, *Chair*
Masayuki Itagaki, *Vice Chair*
James Noël, *Secretary/Treasurer*

Dielectric Science & Technology

Yaw Obeng, *Chair*
Vimal Chaitanya, *Vice Chair*
Peter Mascher, *Secretary*
Uros Cvelbar, *Treasurer*

Electrodeposition

Stanko Brankovic, *Chair*
Philippe Vereecken, *Vice Chair*
Natasa Vasiljevic, *Secretary*
Luca Magagnin, *Treasurer*

Electronics & Photonics

Colm O'Dwyer, *Chair*
Junichi Murota, *Vice Chair*
Robert Lynch, *2nd Vice Chair*
Soohwan Jang, *Secretary*
Yu-Lin Wang, *Treasurer*

Energy Technology

Andy Herring, *Chair*
Vaidyanathan Subramanian, *Vice Chair*
William Mustain, *Secretary*
Katherine Ayers, *Treasurer*

High Temperature Materials

Greg Jackson, *Chair*
Paul Gannon, *Vice Chair*
Sean Bishop, *Jr. Vice Chair*
Courtney Kreller, *Secretary/Treasurer*

Industrial Electrochemistry & Electrochemical Engineering

Douglas Riemer, *Chair*
John Staser, *Vice Chair*
Shrisudersan Jayaraman, *Secretary/Treasurer*

Luminescence & Display Materials

Mikhail Brik, *Chair*
Jakoah Brgoch, *Vice Chair*
Rong-Jun Xie, *Secretary/Treasurer*

Organic & Biological Electrochemistry

Graham Cheek, *Chair*
Diane Smith, *Vice Chair*
Sadagopan Krishnan, *Secretary/Treasurer*

Nanocarbons

Slava Rotkin, *Chair*
Hiroshi Imahori, *Vice Chair*
Olga Boltalina, *Secretary*
R. Bruce Weisman, *Treasurer*

Physical & Analytical Electrochemistry

Alice Suroviec, *Chair*
Petr Vanýsek, *Vice Chair*
Andrew Hillier, *Secretary*
Stephen Paddison, *Treasurer*

Sensor

Nianqiang Wu, *Chair*
Ajit Khosla, *Vice Chair*
Jessica Koehne, *Secretary*
Larry Nagahara, *Treasurer*

ECS Sections

Arizona Section – Candace Kay Chan, *Chair*

Brazil Section – Ernesto Pereira, *Chair*

Canada Section - Christa Brosseau, *Chair*

Chicago Section – Alan Zdunek, *Chair*

Chile Section – Jose H. Zagal, *Chair*

China Section – Yong Yao Xia, *Chair*

Cleveland Section – Heidi B. Martin, *Chair*

Detroit Section – Srikanth Arisetty, *Chair*

Europe Section – Petr Vanýsek, *Chair*

Georgia Section - Seung Woo Lee, *Chair*

India Section - Vijayamohan K. Pillai, *Chair*

Israel Section - Daniel Mandler, *Chair*

Japan Section - Hiroshi Iwai, *Chair*

Korea Section - Yung-Eun Sung, *Chair*

Mexico Section – Ignacio Gonzalez, *Chair*

National Capital Section – Eric D. Wachsman, *Chair*

New England Section - Sanjeev Mukerjee, *Chair*

Pittsburgh Section – Clifford W. Walton, *Chair*

San Francisco Section - Yarik Syzdek, *Chair*

Singapore Section – Qingui Yan, *Chair*

Taiwan Section – Bing-Joe Hwang, *Chair*

Texas Section – Jeremy P. Meyers, *Chair*

Twin Cities Section - Peter Zhang, *Chair*

ECS Community

ECS Student Chapters

Chapter Name	Year Chartered	Faculty Advisor(s)
Aalborg University	2017	Daniel-Ioan Stroe Maciej Swierczynski
Auburn University	2007	Majid Beidaghi
Belgium Student Chapter	2015	Philippe M. Vereecken Stefan De Gendt
Boston Student Chapter	2009	Eugene Smotkin
British Columbia University	2013	Dan Bizzotto
Brno University of Technology	2006	Jiri Vondrak
California State University-Fullerton	2012	John L. Haan
Case Western Reserve University	2005	Robert F. Savinell
Central Illinois Student Chapter	2008	Andrzej Wieckowski
Clemson University	2014	Stephen E. Creager
Colorado School of Mines	2012	Andy M. Herring
Drexel University	2012	Yury Gogotsi Ekaterina A. Pomerantseva
Georgia Institute of Technology	2008	Seung Woo Lee
Hong Kong University of Science and Technology	2016	Francesco Ciucci Minhua Shao
Illinois Institute of Technology	2015	Wei Chen Adam Hock
Indiana University	2012	Dennis Peters Lane A. Baker
Kerala, India at CUSAT Student Chapter	2008	Madambi K. Jayaraj
Lahore, Pakistan Student Chapter	2008	Inam Ul Haque
Lewis University	2015	Jason Keleher
Louisiana State University	2016	Christopher G. Arges
Missouri University of Science and Technology	2017	Amitava Choudhury Jay A. Switzer Manashi Nath
Montana State University	2013	Ryan W. Anderson Paul E. Gannon
Montreal Student Chapter	2010	Steen B. Schougaard
Munich Student Chapter	2015	Hubert Gasteiger
New Mexico State University	2015	Vimal H. Chaitanya Hongmei Luo
North Florida Student Chapter	2014	Pedro Moss
Norwegian University of Science and Technology	2014	Ann Mari Svensson
Ohio State University	2006	Anne C. Co
Ohio University	2011	Gerardine Gabriela Botte
Oklahoma Student Chapter	2017	Sadagopan Krishnan
Rensselaer Polytechnic Institute	2013	David J. Duquette Daniel J. Lewis
Research Triangle Student Chapter	2013	Jeffrey Glass
South Brazil Student Chapter	2010	Luis F. P. Dick
SRM University	2013	Ranjit Thapa Bhalchandra Anand Kakade

Chapter Name	Year Chartered	Faculty Advisor(s)
Tel Aviv University	2009	Eliezer Gileadi Yosi Shacham-Diamand
Texas A&M University	2016	Yue Kuo
Tyndall National Institute	2012	Alan O'Riordan
UK Northwest Student Chapter	2015	Laurence J. Hardwick
University of Alabama	2016	Shanlin Pan
University of Calgary	2011	Viola Ingrid Birss
University of California-Berkeley	2014	Bryan D. McCloskey
University of California-Los Angeles	2015	Sarah H. Tolbert
University of California-Riverside	2011	Alexander A. Balandin
University of California-San Diego	2014	Shirley Meng
University of Central Florida	2000	Kalpathy B. Sundaram
University of Cincinnati	2007	Marc Cahay
University of Florida	2005	Erin Patrick
University of Houston	2016	Yan Yao
University of Illinois at Chicago	2016	Sanjay Kumar Behura Brian P. Chaplin
University of Iowa	2014	Johna Leddy
University of Kansas	2016	Trung Van Nguyen
University of Kentucky	2014	Doo Young Kim
University of Maryland	2011	Eric D. Wachsman
University of Nevada-Reno	2014	Dev Chidambaram
University of New Mexico	2017	Fernando H. Garzon Plamen B. Atanassov
University of Oxford	2016	Charles W. Monroe Kylie A. Vincent
University of Pittsburgh	2014	Prashant N. Kumta Spandan Maiti
University of South Carolina	2010	William Mustain
University of St. Andrews	2015	John T. S. Irvine
University of Tartu	2013	Kaido Tammeveski
University of Texas at Austin	2006	Arumugam Manthiram
University of Texas at Dallas	2012	Moon J. Kim
University of Toronto	2016	Donald W. Kirk
University of Utah	2015	Shelley D. Minter
University of Virginia	2006	Giovanni Zangari
University of Washington	2016	Daniel T. Schwartz Venkat R. Subramanian Stuart B. Adler
University of Western Ontario	2017	Jungsook Clara Wren Zhifeng Ding James J. Noel D. W. Shoemith
Valley of the Sun (Central Arizona)	2013	Candace Kay Chan

ecs transactions

Volume 85 – Seattle, Washington

from the Seattle, WA meeting, May 13-17, 2018

The following issues of *ECS Transactions* are from symposia held during the 233rd ECS meeting in Seattle, WA. All issues are available in electronic (PDF) editions, which may be purchased, beginning May 4, 2018. Some issues are also available in CD or USB editions.

Enhanced Issues – Now Available

Vol. 85 Engineering Carbon Hybrids – Carbon Electronics 3
No. 1 CD or USB.....\$74.00 PDF.....\$54.31

Vol. 85 High Temperature Corrosion and Materials Chemistry 13
No. 2 CD or USB.....\$109.00 PDF.....\$94.04

Vol. 85 Nanoscale Luminescent Materials 5
No. 3 CD or USB.....\$117.00 PDF.....\$101.57

Vol. 85 Industrial Electrochemistry and Electrochemical Engineering
No. 4 General Session
CD or USB.....\$128.00 PDF.....\$115.93

Vol. 85 Multiscale Modeling, Simulation and Design – From Conventional
No. 5 Methods to the Latest in Data Science
CD or USB.....\$119.00 PDF.....\$104.08

Vol. 85 Silicon Compatible Materials, Processes, and Technologies for
No. 6 Advanced Integrated Circuits and Emerging Applications 8
CD or USB.....\$112.00 PDF.....\$96.55

Vol. 85 Wide Bandgap Semiconductor Materials and Devices 19
No. 7 CD or USB.....\$144.00 PDF.....\$131.05

Vol. 85 Advanced CMOS-Compatible Semiconductor Devices 18
No. 8 CD or USB.....\$104.00 PDF.....\$91.53

Vol. 85 Solid-state Electronics and Photonics in Biology and Medicine 5
No. 9 CD or USB.....\$124.00 PDF.....\$109.10

Vol. 85 Electrosynthesis of Fuels 5
No. 10 CD or USB.....\$114.00 PDF.....\$99.06

Vol. 85 Oxygen or Hydrogen Evolution Catalysis for Water Electrolysis 4
No. 11 CD or USB.....\$158.00 PDF.....\$143.95

Vol. 85 Electrocatalysis 9: Symposium in Honor of Radoslav Adzic
No. 12 CD or USB.....\$158.00 PDF.....\$143.95

ECS Members Receive 20% Off
www.electrochem.org/online-store

Forthcoming Issues

Seattle Standard Issue

Following the conclusion of the Seattle meeting, each of the symposia below will be included as a chapter in the *standard* issue of this volume of *ECS Transactions*. An electronic (PDF) edition will be available for purchase from the ECS Online Store.

A01: Battery and Energy Technology Joint General Session

A02: Large-Scale Energy Storage 9

A03: Li-ion Batteries and Beyond

A04: Materials Recycling for Energy Conversion and Storage

B01: Carbon Nanostructures for Energy Conversion and Storage

B02: Carbon Nanostructures in Medicine and Biology

B03: Carbon Nanotubes – From Fundamentals to Devices

B04: International Symposium on Nanomaterials: Focus – Korea

B05: Fullerenes - Endohedral Fullerenes and Molecular Carbon

B06: 2D Layered Materials from Fundamental Science to Applications

B07: Inorganic/Organic Nanohybrids for Energy Conversion

B08: Porphyrins, Phthalocyanines, and Supramolecular Assemblies

C01: Corrosion General Session

D02: Plasma and Thermal Processes for Materials Modification, Synthesis and Processing 2

E01: Electrodeposition of Micro and Nano Materials for Batteries and Sensors

E02: Surfactant and Additive Effects on Thin Film Deposition, Dissolution, and Particle Growth

H04: Wearable and Flexible Electronic and Photonic Technologies

I01: State of the Art Tutorial in Low Temperature Fuel Cell
Electrocatalysis: The Challenge of High Current Density
Performance at Low Platinum Loading

I04: Materials for Low Temperature Electrochemical Systems 4

I05: Renewable Fuels via Artificial Photosynthesis or Heterocatalysis 3

I06: Mechano-Electro-Chemical Coupling in Energy Related Materials and Devices 3

I07: Energy Conversion Systems Based on Nitrogen

K01: 13th Manual M. Baizer Memorial Symposium on Organic Electrochemistry

K03: Oxidation and Reduction: Exploring Electron Transfer Reactions in Chemistry and Biology

L01: Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry General Session

L03: Biological Fuel Cells 8

L04: Charge Transfer: Electrons, Protons, and Other Ions 3

L05: Oxygen Reduction Reactions

L06: Nanoporous Materials

M01: Sensors, Actuators, and Microsystems General Session

M02: Microfluidics, Sensors, and Devices 2

Z01: General Student Poster Session

Z02: Nanotechnology General Session

Z03: Solid State Topics General Session

Ordering Information

For pricing and ordering information, please visit the ECS Online Store: www.electrochem.org/online-store.

Email: ecst@electrochem.org

ECS Community 2017/2018

ECS Committees and Subcommittees

Executive Committee of the Board of Directors

	Term
Johna Leddy	Chair, Spring 2018
Yue Kuo	Spring 2019
Christina Bock	Spring 2020
Stefan De Gendt	Spring 2021
James Fenton	Spring 2020
E. Jennings Taylor	Spring 2018
Roque Calvo	Executive Director, Term as ED

Board of Directors, Nonprofit Financial Professional

Stuart Swirson	Spring 2019
----------------	-------------

Audit Committee

Krishnan Rajeshwar	Chair, Immediate Past President, Spring 2018
Johna Leddy	President, Spring 2018
Yue Kuo	Senior Vice-President, Spring 2018
E. Jennings Taylor	Treasurer, Spring 2018
Stuart Swirson	Nonprofit Financial Professional, Spring 2019

Education Committee

James Noël	Chair, Spring 2021
Luke Haverhals	Spring 2018
Vimal Chaitanya	Spring 2018
Anne Co	Spring 2019
Enn Lust	Spring 2019
Kalpathy Sundaram	Spring 2020
Alice Suroviec	Spring 2020
Keryn Lian	Spring 2021
David Hall	Spring 2021
Margaret Calhoun	Spring 2018
Daniel Parr	Spring 2019
James Fenton	Secretary, Spring 2020
William Mustain	Chair, Individual Membership Committee, Spring 2020

Ethical Standards Committee

Krishnan Rajeshwar	Chair, Immediate Past President, Spring 2018
Fernando Garzon	Past Officer, Spring 2018
Dennis Hess	Past Officer, Spring 2019
E. Jennings Taylor	Treasurer, Spring 2018
James Fenton	Secretary, Spring 2020

Finance Committee

E. Jennings Taylor	Chair, Treasurer, Spring 2018
John Turner	Spring 2018
Jean St-Pierre	Spring 2018
Robert Mantz	Spring 2019
Mark Verbrugge	Spring 2019
Tim Gamberzky	Chief Operating Officer, Term as COO
James Fenton	Secretary, Spring 2020

Honors and Awards Committee

Peter Fedkiw	Chair, Spring 2019
Marca Doeff	Spring 2018
Takayuki Homma	Spring 2018
Francis D'Souza	Spring 2018
Joseph Stetter	Spring 2019
Rohan Akolkar	Spring 2019
R. Bruce Weisman	Spring 2019
Vimal Chaitanya	Spring 2020
Thomas Moffat	Spring 2020
Jean St-Pierre	Spring 2020
Viola Birss	Spring 2021
Shelley Minteer	Spring 2021
Scott Calabrese Barton	Spring 2021
Johna Leddy	President, Spring 2018

Individual Membership Committee

William Mustain	Chair, Spring 2020
Giovanni Zangari	Spring 2018
Jordi Cabana	Spring 2018
Steven Policastro	Spring 2019
M. Neal Golovin	Spring 2019
R. Bruce Weisman	Spring 2020
Timothy Paschkewitz	Spring 2020
Patrick Stanley	Spring 2018
Beatriz Molero Sanchez	Spring 2019
Rob Sides	Chair, Sponsorship Committee, Spring 2019
James Fenton	Secretary, Spring 2020

Nominating Committee

Krishnan Rajeshwar	Chair, Immediate Past President, Spring 2018
Shelley Minteer	Spring 2018
D. Noel Buckley	Spring 2018
Peter Fedkiw	Spring 2018
Stefan De Gendt	Third Vice-President, Spring 2018

Sponsorship Committee

Rob Sides	Chair, Spring 2019
Kohei Uosaki	Spring 2018
Iwona Rutkowska	Spring 2018
Shirley Meng	Spring 2018
Marion Jones	Spring 2019
Khalil Amine	Spring 2019
Chuck Hussey	Spring 2020
Peter Fedkiw	Spring 2020
Xiaoping Jiang	Spring 2020
William Mustain	Chair, Individual Membership Committee, Spring 2020
E. Jennings Taylor	Treasurer, Spring 2018

ECS Community 2017/2018

ECS Committees and Subcommittees

Technical Affairs Committee

Yue Kuo	Chair, Senior Vice-President, Spring 2018
Johna Leddy	President, Spring 2018
Krishnan Rajeshwar	Immediate Past President, Spring 2018
Daniel Scherson	Second Immediate Past President, Spring 2018
Stefan De Gendt	Chair, Meetings Subcommittee, Spring 2018
Christina Bock	Chair, Publications Subcommittee, Spring 2018
Eric Wachsman	Chair, Interdis. Sci. & Tech. Subcom., Spring 2019
Roque Calvo	Executive Director, Term as ED

Tellers of Election

Craig Arnold	Chair, Spring 2018
James Amick	Spring 2018
Norman Goldsmith	Spring 2018
Ronald Enstrom	Spring 2018
William Ayers	Spring 2018
Elizabeth Biddinger	Spring 2018

Ways and Means Committee

James Fenton	Chair, Spring 2020
Gessie Brissard	Spring 2018
Michael Carter	Spring 2018
Nianqiang (Nick) Wu	Spring 2019
John Weidner	Spring 2019
Christina Bock	Second Vice-President, Spring 2018
Yue Kuo	Senior Vice-President, Spring 2018

Publications Subcommittee of the Technical Affairs Committee

Christina Bock	Chair, Second Vice-President, Spring 2018
Stefan De Gendt	Vice Chair, Third Vice-President, Spring 2018
Robert Savinell	JES Editor, 5/17/2020
Dennis Hess	JSS Editor, 12/31/2018
Krishnan Rajeshwar	Interface Editor, 12/31/2018
Jeffrey Fergus	ECS Transactions Editor, 12/31/2020
Elizabeth Biddinger	Spring 2018
D. Noel Buckley	Spring 2019
Scott Calabrese Barton	Spring 2020
Mary Yess	Publisher, Term as Pub

Meetings Subcommittee of the Technical Affairs Committee

Stefan De Gendt	Chair, Third Vice-President, Spring 2018
Christina Bock	Vice Chair, Second Vice-President, Spring 2018
Adam Weber	Spring 2018
Bor Yann Liaw	Spring 2019
Thomas Moffat	Spring 2020
Mary Yess	Publisher, Term as Pub

Interdisciplinary Science and Technology Subcommittee of the Technical Affairs Committee

Eric Wachsman	Chair, Spring 2019
Yaw Obeng	DST, Spring 2018
Gerardine Botte	IEEE, Spring 2018
Rangachary Mukundan	SENS, Spring 2018
Andrew Hillier	PAED, Spring 2018
Martin Winter	BATT, Spring 2020
Douglas Hansen	CORR, Spring 2020
John Stickney	ELDP, Spring 2020
Richard Martel	NANO, Spring 2020
Shelley Minter	Spring 2021
Peter Mascher	Spring 2021
Andrew Hoff	EPD, Spring 2021
Katherine Ayers	ETD, Spring 2021

Symposium Planning Advisory Board of the Technical Affairs Committee

Stefan De Gendt	Chair, Spring 2018
Yaw Obeng	Spring 2018
Slava Rotkin	Spring 2018
Douglas Riemer	Spring 2018
Christopher Johnson	Fall 2018
Sannakaisa Virtanen	Fall 2018
Nianqiang Wu	Fall 2018
Colm O'Dwyer	Spring 2019
Andy Herring	Spring 2019
Graham Cheek	Spring 2019
Alice Surovic	Spring 2019
Stanko Brankovic	Fall 2019
Greg Jackson	Fall 2019
Mikhail Brik	Fall 2019
Eric Wachsman	Spring 2019

Society Historian

Zoltan Nagy	Spring 2018
-------------	-------------

American Association for the Advancement of Science

Roque Calvo	Executive Director, Term as ED
-------------	--------------------------------

Chemical Heritage Foundation

Yury Gogotsi	Spring 2018
--------------	-------------

National Inventors Hall of Fame

Peter Fedkiw	Chair, Honors & Awards Committee, Spring 2019
--------------	---

External Relations Representative

Mark Orazem	Spring 2018
-------------	-------------



Get Involved with ECS

Founded in 1902, ECS is led by scientists, for scientists. ECS advances electrochemistry and solid state science and technology by publishing peer-reviewed scholarly journals, convening scientific meetings, and supporting emerging scientists in our fields.

Free the Science is ECS's initiative to move toward a future that embraces open science to further advance research in our fields. This is a long-term vision for transformative change in the traditional models of communicating scholarly research.

**The section that follows will tell you
how to get involved with ECS.**



www.electrochem.org

Corporate Opportunities

ECS provides unique programs to help your organization gain exposure to our community of engineers and scientists!

Options include:

- ✓ Exhibiting opportunities-get in front of decision makers
- ✓ General meeting sponsorships-highlight your brand
- ✓ Symposium sponsorships-support the scientists behind the research
- ✓ Institutional Membership-create a mutually beneficial partnership with ECS
- ✓ Print & Digital Advertising-promote your products and services



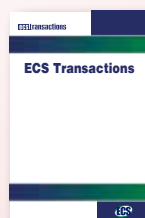
sponsorship@electrochem.org

Get your subscription today!

More than 141,000 articles and abstracts in all areas of electrochemistry and solid state science and technology from one of the leading nonprofit publishers in the field.



Rigorous peer review.
Continuous publication.
High impact research.



Flexible subscription options are available to academic and corporate libraries and other institutions.

Advertising opportunities available.

Contact sponsorship@electrochem.org for more information.

Visit www.ecsdl.org for more information.





FREE YOUR

BRIGHT IDEAS

PUBLISH WITH ECS!

- ✓ Authoritative & Comprehensive
- ✓ Rigorous Peer Review
- ✓ Fast Turn-Around
- ✓ Visibility & Discoverability
- ✓ Editors' Choice Recognition
- ✓ Long-Term, High Impact
- ✓ Author Choice Open Access
- ✓ Awards for Young Authors

Find out what publishing with ECS can do for you.
www.electrochem.org/whypublish

Break down barriers.

Accelerate progress.

Promote collaboration.

Make an impact.

Get read. Get cited.



Need another reason to publish your next article
Author Choice Open Access with ECS?

www.electrochem.org/OA



AIMESTM **2018**
 AMERICAS INTERNATIONAL MEETING ON
 ELECTROCHEMISTRY AND SOLID STATE SCIENCE

2018 ECS and SMEQ Joint International Meeting



CANCUN  **MEXICO**

September 30-October 4, 2018

Moon Palace Resort

Important Dates



234th Meeting of
 The Electrochemical
 Society



XXXIII Congreso
 de la Sociedad Mexicana
 de Electroquímica

11th Meeting of the
 Mexico Section of
 The Electrochemical Society

with the Technical Cosponsorship of
 Sociedade Brasileira de Eletroquímica
 e Eletroanalítica (SBEE)

Technical Program Published Online June

Meeting Registration Opens June

Travel Grant Applications Due June 18

Meeting Sponsor and
 Exhibitor Deadline June 20

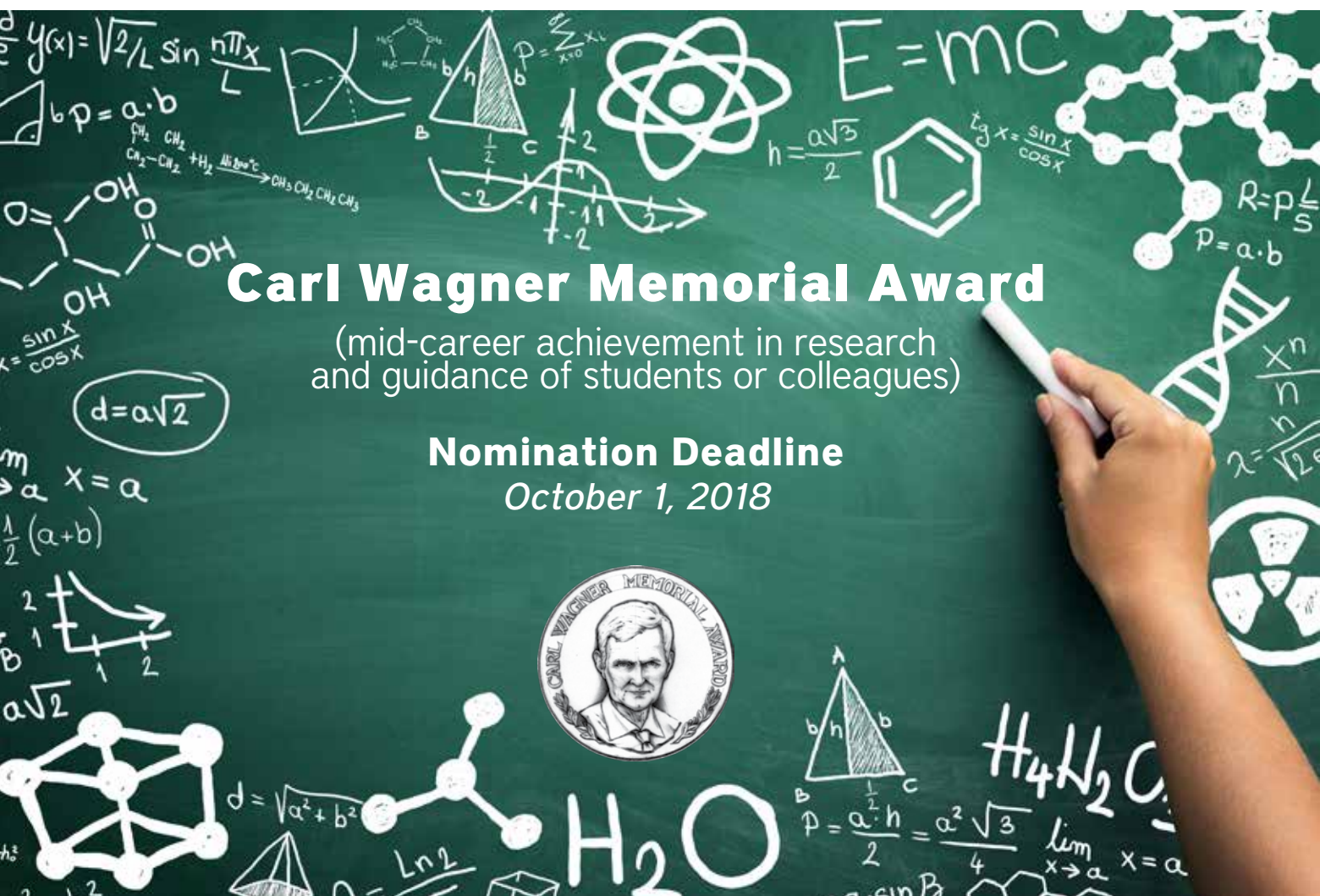
Hotel and Early Bird
 Meeting Registration Deadline August 27



Career Expo

Taking your career to the next level.

Visit the Career Expo in the exhibit hall May 14-16.



Carl Wagner Memorial Award

(mid-career achievement in research and guidance of students or colleagues)

Nomination Deadline

October 1, 2018



6 Ways to Give to ECS

1
Donate to our
Education
Fund, support
educational
programming

2
Make a gift of
stock

3
Give a gift
at checkout
when you're
registering for
an ECS meeting

4
Donate your
stipend,
royalties,
or speaker
fees

5
Make a small
recurring gift each
month

6
Make a planned
gift and join
the Carl Hering
Legacy Circle



Visit www.electrochem.org and click the red **DONATE** button.
Contact development@electrochem.org

Free the Science is ECS's initiative to move toward a future that embraces open science to further advance research in our fields. This is a long-term vision for transformative change in the traditional models of communicating scholarly research. ECS believes that openness democratizes access to the scientific process; to that end, ECS is committed to playing a crucial role in implementing the necessary changes.

#FREE
THE
SCIENCE

www.freethescience.org



To help *Free the Science* visit freethescience.org.

ECS Institutional Members

The Electrochemical Society values the support of its institutional members. Institutional members help ECS support scientific education, sustainability, and innovation. Through ongoing partnership, ECS will continue to lead as the advocate, guardian, and facilitator of electrochemical and solid state science and technology.

Benefits of Membership

Discounts on:

- Advertising in print and online
- Meeting registrations
- Exhibits and sponsorships
- Access to ECS Digital Library



Benefactor

AMETEK-Scientific Instruments (37)
Bio-Logic USA/Bio-Logic SAS (10)
Duracell (61)
Gamry Instruments (11)
Gelest, Inc. (9)

Hydro-Québec (11)
Industrie De Nora S.p.A. (35)
Pine Research Instrumentation (12)
Saft Batteries, Specialty Batteries Group (36)

(Number in parentheses indicates years of membership)

Patron

3M (29)
Energizer (73)
Faraday Technology, Inc. (12)
IBM Corporation Research Center (61)

Lawrence Berkeley National Laboratory (14)
Panasonic Corporation, AIS Company (24)
Scribner Associates, Inc. (22)
Toyota Research Institute of North America (10)

Sponsoring

BASi (3)
Central Electrochemical Research Institute (25)
DLR-Institut für Vernetzte Energiesysteme e.V. (10)
EL-CELL GmbH (4)
Ford Motor Corporation (4)
GS Yuasa International Ltd. (38)
Honda R&D Co., Ltd. (11)
Medtronic Inc. (38)
Nissan Motor Co., Ltd. (11)

Permascand AB (15)
Technic Inc. (22)
Teledyne Energy Systems, Inc. (19)
The Electrosynthesis Company, Inc. (22)
Tianjin Lishen Battery Joint-Stock Co., Ltd. (4)
Toyota Central R&D Labs., Inc. (38)
Yeager Center for Electrochemical Sciences (20)
ZSW (14)

Sustaining

Axiall Corporation (23)
General Motors Holdings LLC (66)
Giner, Inc./GES (32)
International Lead Association (39)
Ion Power Inc. (4)
Kanto Chemical Co., Inc. (6)
Karlsruher Institut für Technologie (2)

Leclanche SA (33)
Los Alamos National Laboratory (10)
MTI Corporation (2)
Occidental Chemical Corporation (76)
Sandia National Laboratories (42)
SanDisk (4)
Targray (2)

Please help us continue the vital work of ECS by joining as an institutional member today.
To join or discuss institutional membership options please contact Shannon.Reed@electrochem.org.

MAXIMIZE YOUR MEMBERSHIP

1 Activate your
Membership



2 Log on to
electrochem.org
and explore



3 Update your
My Account
member profile



5 Join the
discussion on
the ECSBlog.org



4 Get connected with
other members in our
Membership Directory



6 Explore professional
development
and educational
opportunities



8 Publish your
research
with ECS



7 Attend an
ECS Meeting



10 Volunteer to
serve on a
committee or
section



9 Contribute to
#FreethScience



11 Renew your
Membership!



www.electrochem.org/membership



Connecting Research
and Researchers

DISTINGUISH YOURSELF IN THREE EASY STEPS.



REGISTER
for an ORCID iD



CONNECT your
iD to your work



USE YOUR iD in grants,
publications, datasets,
and more



**Register today at
orcid.org**

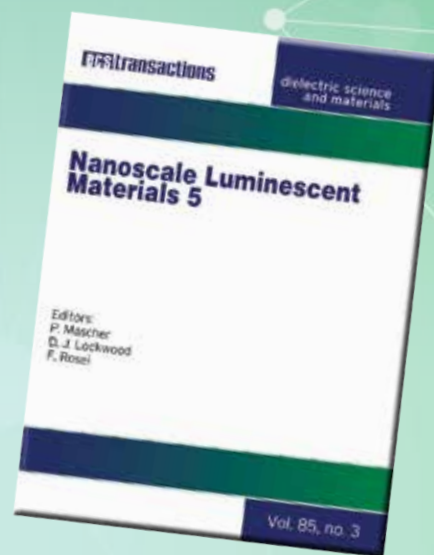
What is ORCID?

ORCID is a registry of unique identifiers for researchers and scholars that is open, non-proprietary, transparent, mobile, and community-based.

ORCID provides a persistent digital identifiers that distinguishes you from every other contributor and supports automated linkages among all your professional activities.

**Join ORCID
today and
become part of
the solution.**

ecsttransactions






**Issues from the 233rd ECS Meeting
Now Available**

**Browse All Available Issues:
www.electrochem.org/ecst**

Forthcoming Publications

- 19th International Conference on Advanced Batteries, Accumulators and Fuel Cells (ABAF 2018) – Brno, Czech Republic (August 26-29, 2018)
- First International Conference on 4D Materials and Systems – Yonezawa, Japan (August 26-30, 2018)
- AiMES 2018, ECS and SMEQ Joint International Meeting – Cancun, Mexico (September 30 – October 4, 2018)
- *Additional 2018 volumes to be announced.*


A — Batteries and Energy Storage


- A01 — **Battery and Energy Technology Joint General Session**
Mani Manivannan, S. R. Narayan, Marca Doeff
Battery, Energy Technology 
- A02 — **Large-Scale Energy Storage 9**
Trung Nguyen, Wei Wang, Adam Weber, Jean St-Pierre, Jay Whitacre, Claire Xiong, Christopher Johnson
Electronics and Photonics, Battery, Industrial Electrochemistry and Electrochemical Engineering 
- A03 — **Li-ion Batteries and Beyond**
John Vaughney, Ying Meng, Jihui Yang, Pawel Kulesza, Vito Di Noto
Battery, Physical and Analytical Electrochemistry 
- A04 — **Materials Recycling for Energy Conversion and Storage**
Linda Gaines, E. Taylor, Douglas Riemer, Michael Slater, John Staser, Andrew Herring, Scott Calabrese Barton, William Mustain
Battery, Energy Technology, Industrial Electrochemistry and Electrochemical Engineering 

B — Carbon Nanostructures and Devices



- B01 — **Carbon Nanostructures for Energy Conversion and Storage**
Jeffrey Blackburn, Vito Di Noto, Plamen Atanassov, Michael Arnold, David Cliffler, Christina Bock
Nanocarbons, Physical and Analytical Electrochemistry 
- B02 — **Carbon Nanostructures in Medicine and Biology**
Daniel Heller, Fotios Papadimitrakopoulos, Ardemis Boghossian, Mekki Bayachou, James Burgess, Larry Nagahara, Tatiana DaRos
Nanocarbons, Organic and Biological Electrochemistry, Sensor 
- B03 — **Carbon Nanotubes—From Fundamentals to Devices**
Stephen Doorn, Yury Gogotsi, Pawel Kulesza, Ming Zheng, Slava Rotkin, R. Bruce Weisman, Shigeo Maruyama, Benjamin Flavel
Nanocarbons, Physical and Analytical Electrochemistry 
- B04 — **International Symposium on Nanomaterials: Focus—Korea**
Hiroshi Imahori, Nazario Martin, Shigeo Maruyama, Slava Rotkin, Doo-Hyun Ko, Sang Bok Lee, Ho Seok Park, Yuanzhe Piao, Jaejoon Lee, Richard Martel
Nanocarbons, Dielectric Science and Technology, Electronics and Photonics, Industrial Electrochemistry and Electrochemical Engineering 
- B05 — **Fullerenes—Endohedral Fullerenes and Molecular Carbon**
Shangfeng Yang, Alan Balch, Francis D'Souza, Luis Echegoyen, Dirk Guldi, Nazario Martin, Steven Stevenson
Nanocarbons 
- B06 — **2D Layered Materials from Fundamental Science to Applications**
Michael Arnold, Stefan De Gendt, Zia Karim, Colm O'Dwyer, Slava Rotkin, Lain-Jong Li, Yaw Obeng
Nanocarbons, Dielectric Science and Technology, Electronics and Photonics, Industrial Electrochemistry and Electrochemical Engineering 
- B07 — **Inorganic/Organic Nanohybrids for Energy Conversion**
Hiroshi Imahori, Prashant Kamat, Kei Murakoshi, Tsukasa Torimoto, Takanori Fukushima
Nanocarbons 
- B08 — **Porphyrins, Phthalocyanines, and Supramolecular Assemblies**
Karl Kadish, Roberto Paolesse, Tomas Torres, Nathalie Solladie, Diane Smith, Norbert Jux
Nanocarbons, Organic and Biological Electrochemistry 
- B09 — **Engineering Carbon Hybrids—Carbon Electronics 3**
Rodrigo Martinez-Duarte, Andrew Hoff, Marc Madou, Richard Martel, Chunlei Wang, D. Landheer, Michael Carter, Robert Kostecki, Oana Leonte
Dielectric Science and Technology, Battery, Electronics and Photonics, Nanocarbons, Sensor 

C — Corrosion Science and Technology



- C01 — **Corrosion General Session**
Sannakaisa Virtanen, Masayuki Itagaki
Corrosion 

- C02 — **High Temperature Corrosion and Materials Chemistry 13**
Paul Gannon, Torsten Markus, Makoto Nanko, Dev Chidambaram, E. Opila, Jeffrey Fergus, Jan Froitzheim, Gregory Jackson
High Temperature Materials, Corrosion 



D — Dielectric Science and Materials

- D01 — **Nanoscale Luminescent Materials 5**
Peter Mascher, David Lockwood, Federico Rosei
Dielectric Science and Technology, Luminescence and Display Materials 
- D02 — **Plasma and Thermal Processes for Materials Modification, Synthesis, and Processing 2**
Sreeram Vaddiraju, Uros Cvelbar, Mahendra Sunkara, Dennis Hess, Peter Mascher, Michael Carter, Manfred Engelhardt, Oana Leonte
Dielectric Science and Technology, Sensor 


E — Electrochemical/Electroless Deposition

- E01 — **Electrodeposition of Micro and Nano Materials for Batteries and Sensors**
Philippe Vereecken, Nianqiang Wu, James Rohan
Electrodeposition, Battery, Sensor 
- E02 — **Surfactant and Additive Effects on Thin Film Deposition, Dissolution, and Particle Growth**
Thomas Moffat, Peter Broekmann, Rohan Akolkar, Ji-Guang Zhang, Benjamin Wiley
Electrodeposition 

F — Electrochemical Engineering

- F01 — **Industrial Electrochemistry and Electrochemical Engineering General Session**
John Staser, Douglas Riemer
Industrial Electrochemistry and Electrochemical Engineering 
- F02 — **Multiscale Modeling, Simulation and Design – From Conventional Methods to the Latest in Data Science**
John Harb, Michael Lowe, Gerardine Botte, Jean St-Pierre, Venkat Subramanian
Industrial Electrochemistry and Electrochemical Engineering, Energy Technology 







G — Electronic Materials and Processing

- G01 — **Silicon Compatible Materials, Processes, and Technologies for Advanced Integrated Circuits and Emerging Applications 8**
Fred Roozeboom, Paul Timans, Evgeni Gusev, Zia Karim, Stefan De Gendt, Hemanth Jagannathan, Kuniyuki Kakushima
Electronics and Photonics, Dielectric Science and Technology 



H — Electronic and Photonic Devices and Systems

- H01 — **Wide Bandgap Semiconductor Materials and Devices 19**
Jennifer Hite, Vidhya Chakrapani, John Zavada, Travis Anderson, Steve Kilgore
Electronics and Photonics 
- H02 — **Advanced CMOS-Compatible Semiconductor Devices 18**
Joao Martino, Jean-Pierre Raskin, Siegfried Selberherr, Hiromu Ishii, Francisco Gamiz, Bich-Yen Nguyen, Akira Yoshino
Electronics and Photonics 
- H03 — **Solid-state Electronics and Photonics in Biology and Medicine 5**
Yu-Lin Wang, Andrew Hoff, Chih-Ting Lin, Wenzhuo Wu, Lluís Marsal, M. Deen, Toshiya Sakata, Zong-Hong Lin, Zoraida Aguilar
Electronics and Photonics 
- H04 — **Wearable and Flexible Electronic and Photonic Technologies**
Colm O'Dwyer, Wei Gao, Durgamadhab Misra, Shelley Minter, Scott Calabrese Barton, Lain-Jong Li, Sheng Xu, Jong-Hyun Ahn, Sang-Woo Kim, Yu-Lun Chueh, Jessica Koehne, Ajit Khosla
Electronics and Photonics, Dielectric Science and Technology, Energy Technology, Physical and Analytical Electrochemistry, Sensor, Interdisciplinary Science and Technology Subcommittee 

I — Fuel Cells, Electrolyzers, and Energy Conversion

- I01 — **State of the Art Tutorial in Low Temperature Fuel Cell Electrocatalysis: The Challenge of High Current Density Performance at Low Platinum Loading**
Adam Weber, Peter Strasser, Karen Swider-Lyons
Energy Technology, Industrial Electrochemistry and Electrochemical Engineering, Physical and Analytical Electrochemistry 
- I02 — **Electrosynthesis of Fuels 5**
John Staser, William Mustain, Gessie Brisard, John Flake, Xiao-Dong Zhou, Turgut Gur, Mogens Mogensen, Hui Xu
Industrial Electrochemistry and Electrochemical Engineering, Energy Technology, High Temperature Materials, Organic and Biological Electrochemistry, Physical and Analytical Electrochemistry 
- I03 — **Oxygen or Hydrogen Evolution Catalysis for Water Electrolysis 4**
Hui Xu, Katherine Ayers, Pawel Kulesza, Gang Wu
Energy Technology, Industrial Electrochemistry and Electrochemical Engineering, Physical and Analytical Electrochemistry 
- I04 — **Materials for Low Temperature Electrochemical Systems 4**
Minhua Shao, Gang Wu, Robert Mantz, Wei Gao, Vito Di Noto
Energy Technology, Industrial Electrochemistry and Electrochemical Engineering, Physical and Analytical Electrochemistry 
- I05 — **Renewable Fuels via Artificial Photosynthesis or Heterocatalysis 3**
Nianqiang (Nick) Wu, Heli Wang, Nicolas Gaillard, Frank Osterloh, Mani Manivannan, Jae-Joon Lee, Pawel Kulesza, Eric Miller, Bunsho Ohtani, Vaidyanathan Subramanian
Energy Technology, Organic and Biological Electrochemistry, Physical and Analytical Electrochemistry 
- I06 — **Mechano-Electro-Chemical Coupling in Energy Related Materials and Devices 3**
Jason Nicholas, Nicola Perry, Kejie Zhao, Gery Stafford, Ahmet Kusoglu
High Temperature Materials, Battery, Electrodeposition, Energy Technology 
- I07 — **Energy Conversion Systems Based on Nitrogen**
Gang Wu, Yuyan Shao, Julie Renner, Lauren Greenlee, Hui Xu
Energy Technology 



K — Organic and Bioelectrochemistry

- K01 — **13th Manual M. Baizer Memorial Symposium on Organic Electrochemistry**
Diane Smith, Graham Cheek
Organic and Biological Electrochemistry 
- K03 — **Oxidation and Reduction: Exploring Electron Transfer Reactions in Chemistry and Biology**
Kevin Moeller, James Rusling, Mekki Bayachou, Hugh De Long
Organic and Biological Electrochemistry, Physical and Analytical Electrochemistry 




L — Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry



- L01 — **Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry General Session**
Alice Suroviec, Anne Co
Physical and Analytical Electrochemistry 
- L02 — **Electrocatalysis 9: Symposium in Honor of Radoslav Adzic**
Minhua Shao, Gessie Brisard, Mekki Bayachou, Nenad Markovic, Miomir Vukmirovic, Piotr Zelenay, Kotaro Sasaki, Stanko Brankovic, Junliang Zhang, Jia Wang
Physical and Analytical Electrochemistry, Electrodeposition, Energy Technology 
- L03 — **Biological Fuel Cells 8**
Shelley Minter, Scott Calabrese Barton, Plamen Atanassov
Physical and Analytical Electrochemistry, Energy Technology 
- L04 — **Charge Transfer: Electrons, Protons, and Other Ions 3**
Stephen Paddison, Vito Di Noto, Andrew Herring
Physical and Analytical Electrochemistry, Energy Technology 
- L05 — **Oxygen Reduction Reactions**
Pawel Kulesza, Vito Di Noto, Robert Mantz, Piotr Zelenay, Plamen Atanassov, Yang Shao-Horn, Hui Xu, Minhua Shao, Sanjeev Mukerjee
Physical and Analytical Electrochemistry, Energy Technology 
- L06 — **Nanoporous Materials**
Roseanne Warren, Anne Co, Bo Zhang, Kunal Karan
Physical and Analytical Electrochemistry, Energy Technology 

M — Sensors

- M01 — **Sensors, Actuators, and Microsystems General Session**
Larry Nagahara, Nianqiang Wu, Aleksandr Simonian, Jin-Woo Choi, Ajit Khosla, Leyla Soleymani, Milad Navaei, Mekki Bayachou, Bryan Chin, Daniel Heller
Sensor 
- M02 — **Microfluidics, Sensors, and Devices 2**
Jessica Koehne, Raluca-Ioana Stefan-van Staden, Chris Salthouse, Shekhar Bhansali, Ajit Khosla, Peter Hesketh, Praveen Sekhar
Sensor, Nanocarbons 

Z — General Topics

- Z01 — **General Student Poster Session**
Venkat Subramanian, Kalpathy Sundaram, V. Chaitanya, P. Pharkya, Alice Suroviec
All Divisions 
- Z02 — **Nanotechnology General Session**
Oana Leonte, Z. Chen, Christina Bock, Jessica Koehne
All Divisions, Interdisciplinary Science and Technology Subcommittee 
- Z03 — **Solid State Topics General Session**
Kalpathy Sundaram, Meng Tao, Oana Leonte, Hiroshi Iwai, Michael Carter
Dielectric Science and Technology, Electronics and Photonics, Energy Technology, Luminescence and Display Materials, Nanocarbons, Organic and Biological Electrochemistry, Sensor 

Each symposium will publish an issue of *ECS Transactions*. Issues are available in  **CD or USB** format or as  **electronic (PDF)** editions. Preordered **CD or USB** editions can be picked up at the meeting.

HYPERSPECTRAL AND INFRARED IMAGING

MICROSCOPY WITH **IMA IR** + PRECLINICAL WITH **IR VIVO**



OUR PRODUCTS FIND APPLICATIONS IN:

CNT and QD fluorescence
New dyes discovery
Preclinical imaging
Photovoltaic characterisation



233rd ECS Meeting • May 13-17, 2018 • Seattle, WA

Sunday, May 13

Monday, May 14

Code	Symposium	AM	PM	AM	PM
Ao1	Battery and Energy Technology Joint General Session <i>M. Manivannan, S. Narayan, M. Doeff</i> Battery, Energy Technology	Abst 1-12 Room 607, 6th Floor	Abst 13 Abst 14-23 Room 607, 6th Floor	Abst 24-36 Room 604, 6th Floor Abst 37-49 Room 607, 6th Floor	Abst 50-58 Room 604, 6th Floor Abst 59-67 Room 607, 6th Floor Posters 68-116 Ballroom 6ABC, 6th Floor
Ao2	Large-Scale Energy Storage 9 <i>T. V. Nguyen, A. Z. Weber, C. Xiong, C. S. Johnson, J. St-Pierre, J. Whitacre, W. Wang</i> Electronics and Photonics, Battery, Industrial Electrochemistry and Electrochemical Engineering				
Ao3	Li-ion Batteries and Beyond <i>J. T. Vaughey, Y. S. Meng, J. Yang, P. J. Kulesza, V. Di Noto</i> Battery, Physical and Analytical Electrochemistry	Abst 244-253 Room 608, 6th Floor Abst 254-264 Room 609, 6th Floor	Abst 265-275 Room 608, 6th Floor Abst 276-286 Room 609, 6th Floor	Abst 287-296 Room 608, 6th Floor Abst 297-307 Room 609, 6th Floor	Abst 308-314 Room 608, 6th Floor Abst 315-321 Room 609, 6th Floor Posters 322-370 Ballroom 6ABC, 6th Floor
Ao4	Materials Recycling for Energy Conversion and Storage <i>L. Gaines, E. J. Taylor, W. E. Mustain, D. P. Riemer, M. D. Slater, J. A. Staser, A. M. Herring, S. Calabrese Barton</i> Battery, Energy Technology, Industrial Electrochemistry and Electrochemical Engineering			Abst 605-609 Room 619, 6th Floor	Abst 610-614 Abst 615-618 Room 619, 6th Floor
Bo1	Carbon Nanostructures for Energy Conversion and Storage <i>J. L. Blackburn, V. Di Noto, P. Atanassov, M. S. Arnold, D. E. Cliffler, C. Bock</i> Nanocarbons, Physical and Analytical Electrochemistry	Abst 619-629 Room 201, 2nd Floor	Abst 630-632 Abst 633-640 Room 201, 2nd Floor	Abst 641-651 Room 201, 2nd Floor	Posters 652-663 Ballroom 6ABC, 6th Floor
Bo2	Carbon Nanostructures in Medicine and Biology <i>D. A. Heller, T. DaRos, F. Papadimitrakopoulos, A. A. Boghossian, M. Bayachou, J. D. Burgess, L. A. Nagahara</i> Nanocarbons, Organic and Biological Electrochemistry, Sensor		Abst 664-669 Room 203, 2nd Floor	Abst 670-674 Abst 675-680 Room 203, 2nd Floor	Abst 681-687 Room 203, 2nd Floor

all rooms at Washington State Convention Center

Tuesday, May 15		Wednesday, May 16		Thursday, May 17	
AM	PM	AM	PM	AM	PM
Abst 117-127 Room 607, 6th Floor	Abst 129-140 Room 607, 6th Floor	Abst 141-152 Room 607, 6th Floor	Abst 153-164 Room 607, 6th Floor	Abst 165-178 Room 607, 6th Floor	
Abst 179-183 Abst 184 Abst 185-188 Room 604, 6th Floor	Abst 189-199 Room 604, 6th Floor Posters 200-215 Ballroom 6ABC, 6th Floor	Abst 216-225 Room 604, 6th Floor	Abst 226-236 Room 604, 6th Floor	Abst 237-243 Room 604, 6th Floor	
Abst 371-380 Room 608, 6th Floor Abst 381-391 Room 609, 6th Floor	Abst 392-402 Room 608, 6th Floor Abst 403-413 Room 609, 6th Floor Posters 414-441 Ballroom 6ABC, 6th Floor	Abst 442 Abst 454-463 Room 608, 6th Floor Abst 443-453 Room 609, 6th Floor	Abst 464-476 Room 608, 6th Floor Abst 478-489 Room 609, 6th Floor Posters 490-566 Ballroom 6ABC, 6th Floor	Abst 567-573 Abst 585-587 Room 608, 6th Floor Abst 574-584 Room 609, 6th Floor	Abst 588-593 Room 609, 6th Floor Abst 594-604 Room 608, 6th Floor
Abst 688-691 Room 203, 2nd Floor	Posters 692-694 Ballroom 6ABC, 6th Floor				

233rd ECS Meeting • May 13-17, 2018 • Seattle, WA

		Sunday, May 13		Monday, May 14	
Code	Symposium	AM	PM	AM	PM
Bo3	Carbon Nanotubes - From Fundamentals to Devices <i>S. K. Doorn, Y. Gogotsi, P. J. Kulesza, M. Zheng, S. V. Rotkin, R. Weisman, S. Maruyama, B. S. Flavel</i> Nanocarbons, Physical and Analytical Electrochemistry				
Bo4	International Symposium on Nanomaterials: Focus - Korea <i>H. Imahori, J. Lee, R. Martel, N. Martin, S. Maruyama, S. V. Rotkin, D. Ko, S. Lee, H. Park, Y. Piao</i> Nanocarbons, Dielectric Science and Technology, Electronics and Photonics, Industrial Electrochemistry and Electrochemical Engineering, Korean Electrochemical Society			Abst 754-758 Abst 759-765 Room 205, 2nd Floor	Abst 766-771 Abst 772-776 Room 205, 2nd Floor
Bo5	Fullerenes - Endohedral Fullerenes and Molecular Carbon <i>S. Yang, A. L. Balch, F. D'Souza, L. Echegoyen, D. M. Guldi, N. Martin, S. Stevenson</i> Nanocarbons				
Bo6	2D Layered Materials from Fundamental Science to Applications <i>M. S. Arnold, Y. S. Obeng, S. De Gendt, Z. Karim, C. O'Dwyer, S. V. Rotkin, L. Li</i> Nanocarbons, Dielectric Science and Technology, Electronics and Photonics, Industrial Electrochemistry and Electrochemical Engineering				Abst 829 Abst 830-836 Room 201, 2nd Floor
Bo7	Inorganic/Organic Nanohybrids for Energy Conversion <i>H. Imahori, P. V. Kamat, K. Murakoshi, T. Torimoto, T. Fukushima</i> Nanocarbons				
Bo8	Porphyrins, Phthalocyanines, and Supramolecular Assemblies <i>K. M. Kadish, R. Paolesse, T. Torres, N. Solladie, D. K. Smith, N. Jux</i> Nanocarbons, Organic and Biological Electrochemistry	Abst 959-969 Room 204, 2nd Floor	Abst 970-972 Abst 973-980 Room 204, 2nd Floor	Abst 981-992 Room 204, 2nd Floor	Abst 993-999 Room 204, 2nd Floor

all rooms at Washington State Convention Center

Tuesday, May 15		Wednesday, May 16		Thursday, May 17	
AM	PM	AM	PM	AM	PM
<p>Abst 695-699 Abst 748 Room 205, 2nd Floor</p>	<p>Abst 701-705 Abst 706-710 Room 205, 2nd Floor Posters 711-712 Ballroom 6ABC, 6th Floor</p>	<p>Abst 713-720 Abst 721-724 Room 205, 2nd Floor</p>	<p>Abst 725-729 Abst 730-735 Room 205, 2nd Floor</p>	<p>Abst 736-740 Abst 741-745 Room 205, 2nd Floor</p>	<p>Abst 700 Abst 746-747 749-753 Room 205, 2nd Floor</p>
	<p>Posters 777-785 Ballroom 6ABC, 6th Floor</p>				
	<p>Posters 786-790 Ballroom 6ABC, 6th Floor</p>	<p>Abst 791-795 Abst 796-802 Room 204, 2nd Floor</p>	<p>Abst 803-807 Abst 808-813 Room 204, 2nd Floor</p>	<p>Abst 814-818 Abst 819-825 Room 204, 2nd Floor</p>	<p>Abst 826-828 Room 204, 2nd Floor</p>
<p>Abst 837-847 Room 201, 2nd Floor</p>	<p>Abst 848-856 Room 201, 2nd Floor Posters 857-865 Ballroom 6ABC, 6th Floor</p>	<p>Abst 866-876 Room 201, 2nd Floor</p>	<p>Abst 877-887 Room 201, 2nd Floor</p>	<p>Abst 888-898 Room 201, 2nd Floor</p>	<p>Abst 899-901 Room 201, 2nd Floor</p>
<p>Abst 902-908 Room 203, 2nd Floor</p>	<p>Abst 909-917 Room 203, 2nd Floor Posters 918-920 Ballroom 6ABC, 6th Floor</p>	<p>Abst 921-925 Abst 926-931 Room 203, 2nd Floor</p>	<p>Abst 932-936 Abst 937-942 Room 203, 2nd Floor</p>	<p>Abst 943-947 Abst 948-953 Room 203, 2nd Floor</p>	<p>Abst 954-958 Room 203, 2nd Floor</p>
<p>Abst 1000-1011 Room 204, 2nd Floor</p>	<p>Abst 1012-1020 Room 204, 2nd Floor Posters 1021-1023 Ballroom 6ABC, 6th Floor</p>				

233rd ECS Meeting • May 13-17, 2018 • Seattle, WA

Sunday, May 13

Monday, May 14

Code	Symposium	AM	PM	AM	PM
B09	Engineering Carbon Hybrids - Carbon Electronics 3 <i>R. Martinez-Duarte, A. Hoff, M. J. Madou, R. Martel, C. Wang, D. Landheer, M. T. Carter, R. Kostecki, O. Leonte</i> Dielectric Science and Technology, Battery, Electronics and Photonics, Nanocarbons, Sensor	Abst 1024-1028 Room 205, 2nd Floor	Abst 1029-1033 Abst 1034-1036 Room 205, 2nd Floor		
C01	Corrosion General Session <i>S. Virtanen, M. Itagaki</i> Corrosion			Abst 1041-1049 Room 304, 3rd Floor	Abst 1050-1055 Room 304, 3rd Floor
C02	High Temperature Corrosion and Materials Chemistry 13 <i>P. E. Gannon, E. Opila, J. Fergus, J. Froitzheim, G. S. Jackson, T. Markus, M. Nanko, D. Chidambaram</i> High Temperature Materials, Corrosion			Abst 1104-1110 Room 305, 3rd Floor	Abst 1111-1113 Abst 1114-1116 Room 305, 3rd Floor Poster 1117 Ballroom 6ABC, 6th Floor
D01	Nanoscale Luminescent Materials 5 <i>P. Mascher, D. J. Lockwood, F. Rosei</i> Dielectric Science and Technology, Luminescence and Display Materials			Abst 1143-1145 Abst 1146-1149 Room 308, 3rd Floor	Abst 1150-1152 Room 308, 3rd Floor
D02	Plasma and Thermal Processes for Materials Modification, Synthesis, and Processing 2 <i>S. Vaddiraju, U. Cvelbar, M. K. Sunkara, D. W. Hess, P. Mascher, M. T. Carter, M. Engelhardt, O. Leonte</i> Dielectric Science and Technology, Sensor			Abst 1175-1180 Room 306, 3rd Floor	Abst 1181-1189 Room 306, 3rd Floor Posters 1190-1194 Ballroom 6ABC, 6th Floor
E01	Electrodeposition of Micro and Nano Materials for Batteries and Sensors <i>P. M. Vereecken, J. F. Rohan, N. Wu</i> Electrodeposition, Battery, Sensor				
E02	Surfactant and Additive Effects on Thin Film Deposition, Dissolution, and Particle Growth <i>T. P. Moffat, P. Broekmann, R. Akolkar, J. Zhang, B. Wiley</i> Electrodeposition			Abst 1221-1226 Room 211, 2nd Floor	Abst 1227-1230 Room 211, 2nd Floor

all rooms at Washington State Convention Center

Tuesday, May 15		Wednesday, May 16		Thursday, May 17	
AM	PM	AM	PM	AM	PM
	Posters 1037-1040 Ballroom 6ABC, 6th Floor				
Abst 1056-1062 Room 304, 3rd Floor	Abst 1063-1070 Room 304, 3rd Floor Posters 1071-1086 Ballroom 6ABC, 6th Floor	Abst 1087-1093 Room 304, 3rd Floor	Abst 1094-1103 Room 304, 3rd Floor		
Abst 1118-1123 Abst 1124-1127 Room 305, 3rd Floor	Abst 1128-1135 Room 305, 3rd Floor	Abst 1136-1142 Room 305, 3rd Floor			
Abst 1153-1154 Abst 1155-1157 Room 308, 3rd Floor	Abst 1158-1161 Room 308, 3rd Floor Posters 1162-1163 Ballroom 6ABC, 6th Floor	Abst 1164-1168 Abst 1166-1170 Room 308, 3rd Floor	Abst 1171-1174 Room 308, 3rd Floor		
	Abst 1195-1203 Room 306, 3rd Floor Poster 1204 Ballroom 6ABC, 6th Floor	Abst 1205-1212 Abst 1213-1213 Room 306, 3rd Floor	Abst 1214-1216 Abst 1217-1220 Room 306, 3rd Floor		
Abst 1231-1238 Room 211, 2nd Floor	Abst 1239-1246 Room 211, 2nd Floor Posters 1247-1250 Ballroom 6ABC, 6th Floor	Abst 1251-1259 Room 211, 2nd Floor	Abst 1260-1268 Room 211, 2nd Floor		

233rd ECS Meeting • May 13-17, 2018 • Seattle, WA

		Sunday, May 13		Monday, May 14	
Code	Symposium	AM	PM	AM	PM
Fo1	Industrial Electrochemistry and Electrochemical Engineering General Session <i>J. A. Staser, D. P. Riemer</i> Industrial Electrochemistry and Electrochemical Engineering			Abst 1269-1276 Room 618, 6th Floor	Abst 1277-1282 Room 618, 6th Floor
Fo2	Multiscale Modeling, Simulation and Design – From Conventional Methods to the Latest in Data Science <i>J. N. Harb, M. A. Lowe, G. G. Botte, J. St-Pierre, V. R. Subramanian</i> Industrial Electrochemistry and Electrochemical Engineering, Energy Technology				
Go1	Silicon Compatible Materials, Processes, and Technologies for Advanced Integrated Circuits and Emerging Applications 8 <i>F. Roozeboom, H. Jagannathan, K. Kakushima, P. J. Timans, E. Gusev, Z. Karim, S. De Gendt</i> Electronics and Photonics, Dielectric Science and Technology			Abst 1367 Abst 1368-1371 Room 307, 3rd Floor	Abst 1372-1377 Room 307, 3rd Floor
Ho1	Wide Bandgap Semiconductor Materials and Devices 19 <i>J. K. Hite, V. Chakrapani, J. Zavada, T. J. Anderson, S. H. Kilgore</i> Electronics and Photonics			Abst 1400 Abst 1401-1406 Room 213, 2nd Floor	Abst 1407-1412 Room 213, 2nd Floor
Ho2	Advanced CMOS-Compatible Semiconductor Devices 18 <i>J. A. Martino, J. Raskin, S. Selberherr, H. Ishii, F. Gamiz, B. Nguyen, A. Yoshino</i> Electronics and Photonics			Abst 1455-1460 Room 309, 3rd Floor	Abst 1461-1464 Room 309, 3rd Floor Posters 1465-1468 Ballroom 6ABC, 6th Floor
Ho3	Solid-state Electronics and Photonics in Biology and Medicine 5 <i>Y. Wang, A. Hoff, C. Lin, W. Wu, L. F. Marsal, M. J. Deen, T. Sakata, Z. Lin, Z. P. Aguilar</i> Electronics and Photonics			Abst 1482-1491 Room 212, 2nd Floor	Abst 1492-1495 Room 212, 2nd Floor

all rooms at Washington State Convention Center

Tuesday, May 15		Wednesday, May 16		Thursday, May 17	
AM	PM	AM	PM	AM	PM
Abst 1283-1290 Room 618, 6th Floor	Abst 1291-1301 Room 618, 6th Floor Posters 1302-1309 Ballroom 6ABC, 6th Floor	Abst 1310-1322 Room 618, 6th Floor			
Abst 1323-1332 Room 619, 6th Floor	Abst 1333-1340 Room 619, 6th Floor	Abst 1341-1348 Room 619, 6th Floor	Abst 1349-1357 Room 619, 6th Floor	Abst 1358-1366 Room 619, 6th Floor	
Abst 1378-1382 Room 307, 3rd Floor	Abst 1383-1389 Room 307, 3rd Floor Posters 1390-1399 Ballroom 6ABC, 6th Floor				
Abst 1413-1418 Room 213, 2nd Floor	Abst 1419-1426 Room 213, 2nd Floor Posters 1427-1437 Ballroom 6ABC, 6th Floor	Abst 1438-1441 Abst 1442-1444 Room 213, 2nd Floor	Abst 1445-1454 Room 213, 2nd Floor		
Abst 1469-1473 Room 309, 3rd Floor	Abst 1474-1477 Abst 1478-1481 Room 309, 3rd Floor				
Abst 1496-1504 Room 212, 2nd Floor	Abst 1505-1511 Room 212, 2nd Floor Posters 1512-1515 Ballroom 6ABC, 6th Floor	Abst 1516-1523 Room 212, 2nd Floor	Abst 1524-1531 Room 212, 2nd Floor		

233rd ECS Meeting • May 13-17, 2018 • Seattle, WA

Sunday, May 13

Monday, May 14

Code	Symposium	AM	PM	AM	PM
Ho4	Wearable and Flexible Electronic and Photonic Technologies <i>C. O'Dwyer, S. Xu, J. Ahn, S. Kim, Y. Chueh, J. E. Koehne, A. Khosla, W. Gao, D. Misra, S. D. Minter, S. Calabrese Barton, L. Li</i> Electronics and Photonics, Dielectric Science and Technology, Energy Technology, Physical and Analytical Electrochemistry, Sensor, Interdisciplinary Science and Technology Subcommittee			Abst 1532-1539 Room 214, 2nd Floor	Abst 1540-1543 Room 214, 2nd Floor
Io1	State of the Art Tutorial in Low Temperature Fuel Cell Electrocatalysis: The Challenge of High Current Density Performance at Low Platinum Loading <i>A. Z. Weber, P. Strasser, K. Swider-Lyons</i> Energy Technology, Industrial Electrochemistry and Electrochemical Engineering, Physical and Analytical Electrochemistry				
Io2	Electrosynthesis of Fuels 5 <i>J. A. Staser, G. M. Brisard, J. Flake, W. E. Mustain, X. Zhou, T. M. Gur, M. B. Mogensen, H. Xu</i> Industrial Electrochemistry and Electrochemical Engineering, Energy Technology, High Temperature Materials, Organic and Biological Electrochemistry, Physical and Analytical Electrochemistry				
Io3	Oxygen or Hydrogen Evolution Catalysis for Water Electrolysis 4 <i>H. Xu, K. E. Ayers, P. J. Kulesza, G. Wu</i> Energy Technology, Industrial Electrochemistry and Electrochemical Engineering, Physical and Analytical Electrochemistry			Abst 1637-1645 Room 606, 6th Floor	Abst 1646-1648 Room 606, 6th Floor Posters 1649-1662 Ballroom 6ABC, 6th Floor
Io4	Materials for Low Temperature Electrochemical Systems 4 <i>M. Shao, G. Wu, R. A. Mantz, W. Gao, V. Di Noto</i> Energy Technology, Industrial Electrochemistry and Electrochemical Engineering, Physical and Analytical Electrochemistry	Abst 1717-1726 Room 611, 6th Floor	Abst 1727-1731 Abst 1732-1738 Room 611, 6th Floor	Abst 1739-1741 Abst 1742-1746 Room 611, 6th Floor	Abst 1747 Abst 1748-1751 Room 611, 6th Floor

all rooms at Washington State Convention Center

Tuesday, May 15		Wednesday, May 16		Thursday, May 17	
AM	PM	AM	PM	AM	PM
Abst 1544-1551 Room 214, 2nd Floor	Abst 1552-1560 Room 214, 2nd Floor Posters 1561-1562 Ballroom 6ABC, 6th Floor	Abst 1563-1572 Room 214, 2nd Floor	Abst 1573-1579 Room 214, 2nd Floor		
		Abst 1580-1584 Room 614, 6th Floor	Abst 1585-1591 Room 614, 6th Floor Posters 1592-1593 Ballroom 6ABC, 6th Floor		
		Abst 1594-1603 Room 617, 6th Floor	Abst 1604-1614 Room 617, 6th Floor Posters 1615-1623 Ballroom 6ABC, 6th Floor	Abst 1624-1636 Room 617, 6th Floor	
Abst 1663-1670 Abst 1671 Room 606, 6th Floor	Abst 1672-1682 Room 606, 6th Floor	Abst 1683-1693 Room 606, 6th Floor	Abst 1694-1698 Abst 1699-1704 Room 606, 6th Floor	Abst 1705-1713 Abst 1714-1716 Room 606, 6th Floor	
Abst 1752-1756 Abst 1757-1763 Room 611, 6th Floor	Abst 1764-1767 Abst 1768-1772 Room 611, 6th Floor	Abst 1773-1777 Abst 1778-1785 Room 611, 6th Floor	Abst 1786-1791 Abst 1792-1797 Room 611, 6th Floor Posters 1798-1814 Ballroom 6ABC, 6th Floor	Abst 1815-1819 Room 611, 6th Floor	

233rd ECS Meeting • May 13-17, 2018 • Seattle, WA

		Sunday, May 13		Monday, May 14	
Code	Symposium	AM	PM	AM	PM
1o5	Renewable Fuels via Artificial Photosynthesis or Heterocatalysis 3 <i>N. Wu, J. Lee, P. J. Kulesza, M. Manivannan, E. L. Miller, B. Ohtani, V. Subramanian, H. Wang, N. Gaillard, F. E. Osterloh</i> Energy Technology, Organic and Biological Electrochemistry, Physical and Analytical Electrochemistry	Abst 1820-1832 Room 612, 6th Floor	Abst 1833-1837 Abst 1838-1841 Room 612, 6th Floor	Abst 1842-1843 Abst 1844-1849 Room 612, 6th Floor	Abst 1850-1854 Room 612, 6th Floor
1o6	Mechano-Electro-Chemical Coupling in Energy Related Materials and Devices 3 <i>J. D. Nicholas, N. H. Perry, K. Zhao, G. R. Stafford, A. Kusoglu</i> High Temperature Materials, Battery, Electrodeposition, Energy Technology			Abst 1930-1939 Room 613, 6th Floor	Abst 1940-1944 Room 613, 6th Floor
1o7	Energy Conversion Systems Based on Nitrogen <i>G. Wu, Y. Shao, J. Renner, L. F. Greenlee, H. Xu</i> Energy Technology			Abst 1993-2000 Room 614, 6th Floor	Abst 2001-2006 Room 614, 6th Floor
K01	13th Manual M. Baizer Memorial Symposium on Organic Electrochemistry <i>D. K. Smith, G. T. Cheek</i> Organic and Biological Electrochemistry			Abst 2021 Abst 2022-2029 Room 616, 6th Floor	Abst 2030-2035 Room 616, 6th Floor Posters 2036-2039 Ballroom 6ABC, 6th Floor
K03	Oxidation and Reduction: Exploring Electron Transfer Reactions in Chemistry and Biology				
Lo1	Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry General Session <i>A. H. Suroviec, A. C. Co</i> Physical and Analytical Electrochemistry			Abst 2096-2106 Room 620, 6th Floor	Abst 2106-2114 Room 620, 6th Floor

all rooms at Washington State Convention Center

Tuesday, May 15		Wednesday, May 16		Thursday, May 17	
AM	PM	AM	PM	AM	PM
Abst 1855-1864 Room 612, 6th Floor	Abst 1865-1873 Room 612, 6th Floor	Abst 1874-1882 Room 612, 6th Floor	Abst 1883-1887 Abst 1888-1892 Room 612, 6th Floor Posters 1893-1897 Ballroom 6ABC, 6th Floor	Abst 1898-1914 Room 612, 6th Floor	Abst 1915-1920 Abst 1921-1929 Room 612, 6th Floor
Abst 1945-1951 Room 613, 6th Floor	Abst 1952-1960 Room 613, 6th Floor Posters 1961-1978 Ballroom 6ABC, 6th Floor	Abst 1979-1986 Room 613, 6th Floor	Abst 1987-1992 Room 613, 6th Floor		
Abst 2007-2014 Room 614, 6th Floor	Abst 2015-2019 Room 614, 6th Floor Poster 2020 Ballroom 6ABC, 6th Floor				
Abst 2040-2050 Room 616, 6th Floor					
	Abst 2051-2060 Room 616, 6th Floor	Abst 2061-2068 Room 616, 6th Floor	Abst 2069-2077 Room 616, 6th Floor Posters 2078-2079 Ballroom 6ABC, 6th Floor	Abst 2080-2087 Room 616, 6th Floor	Abst 2088-2095 Room 616, 6th Floor
Abst 2114-2124 Room 620, 6th Floor	Abst 2125-2133 Room 620, 6th Floor	Abst 2134-2144 Room 620, 6th Floor	Abst 2145-2153 Room 620, 6th Floor Posters 2154-2160 Ballroom 6ABC, 6th Floor		

233rd ECS Meeting • May 13-17, 2018 • Seattle, WA

Sunday, May 13

Monday, May 14

Code	Symposium	AM	PM	AM	PM
Lo2	Electrocatalysis 9: Symposium in Honor of Radoslav Adzic <i>M. Shao, G. M. Brisard, M. Bayachou, N. M. Markovic, M. B. Vukmirovic, P. Zelenay, K. Sasaki, S. R. Brankovic, J. Zhang, J. X. Wang</i> Physical and Analytical Electrochemistry, Electrodeposition, Energy Technology			Abst 2161-2168 Room 603, 6th Floor	Abst 2169-2174 Room 603, 6th Floor
Lo3	Biological Fuel Cells 8 <i>S. D. Minteer, S. Calabrese Barton, P. Atanassov</i> Physical and Analytical Electrochemistry, Energy Technology				
Lo4	Charge Transfer: Electrons, Protons, and Other Ions 3 <i>S. J. Paddison, V. Di Noto, A. M. Herring</i> Physical and Analytical Electrochemistry, Energy Technology			Abst 2267-2269 Abst 2270-2275 Room 617, 6th Floor	Abst 2276-2278 Room 617, 6th Floor Posters 2279-2283 Ballroom 6ABC, 6th Floor
Lo5	Oxygen Reduction Reactions <i>P. J. Kulesza, V. Di Noto, R. A. Mantz, P. Zelenay, P. Atanassov, Y. Shao-Horn, H. Xu, M. Shao, S. Mukerjee</i> Physical and Analytical Electrochemistry, Energy Technology			Abst 2297-2299 Abst 2300-2304 Room 602, 6th Floor	Abst 2305-2309 Room 602, 6th Floor
Lo6	Nanoporous Materials <i>R. Warren, K. Karan, A. C. Co, B. Zhang</i> Physical and Analytical Electrochemistry, Energy Technology			Abst 2364-2367 Abst 2368-2371 Room 615, 6th Floor	Abst 2372-2377 Room 615, 6th Floor Posters 2378-2383 Poster 2402 Ballroom 6ABC, 6th Floor
Mo1	Sensors, Actuators, and Microsystems General Session <i>L. A. Nagahara, N. Wu, A. Simonian, J. Choi, A. Khosla, L. Soleymani, M. Navaei, M. Bayachou, B. A. Chin, D. A. Heller</i> Sensor				
Mo2	Microfluidics, Sensors, and Devices 2 <i>J. E. Koehne, A. Khosla, P. Hesketh, P. K. Sekhar, R. Stefan-van Staden, C. Salthouse, S. Bhansali</i> Sensor, Nanocarbons			Abst 2473-2480 Room 310, 3rd Floor	Abst 2481-2487 Room 310, 3rd Floor

all rooms at Washington State Convention Center

Tuesday, May 15		Wednesday, May 16		Thursday, May 17	
AM	PM	AM	PM	AM	PM
Abst 2175-2184 Room 603, 6th Floor	Abst 2185-2194 Room 603, 6th Floor	Abst 2195-2204 Room 603, 6th Floor	Abst 2205-2213 Abst 2214 Room 603, 6th Floor Posters 2215-2217 Ballroom 6ABC, 6th Floor	Abst 2218-2228 Room 603, 6th Floor	Abst 2229-2237 Room 603, 6th Floor
		Abst 2238-2247 Room 615, 6th Floor	Abst 2248-2252 Room 615, 6th Floor Posters 2253-2253 Ballroom 6ABC, 6th Floor	Abst 2254-2266 Room 615, 6th Floor	
Abst 2284-2285 Abst 2286-2290 Room 617, 6th Floor	Abst 2291-2293 Abst 2294-2296 Room 617, 6th Floor				
Abst 2310-2312 Abst 2313-2317 Room 602, 6th Floor	Abst 2318-2321 Abst 2322-2329 Room 602, 6th Floor	Abst 2330-2332 Abst 2333-2338 Room 602, 6th Floor	Abst 2339-2342 Abst 2343-2349 Room 602, 6th Floor Posters 2350-2353 Ballroom 6ABC, 6th Floor	Abst 2354-2357 Abst 2358-2363 Room 602, 6th Floor	
Abst 2384-2387 Abst 2388-2392 Room 615, 6th Floor	Abst 2393-2396 Abst 2397-2401 Room 615, 6th Floor				
Abst 2403-2411 Room 303, 3rd Floor	Abst 2412-2423 Room 303, 3rd Floor	Abst 2424-2435 Room 303, 3rd Floor	Abst 2436 Abst 2437-2446 Room 303, 3rd Floor Posters 2447-2460 Ballroom 6ABC, 6th Floor	Abst 2461-2472 Room 303, 3rd Floor	
Abst 2488-2496 Room 310, 3rd Floor	Abst 2497-2502 Room 310, 3rd Floor Posters 2503-2510 Ballroom 6ABC, 6th Floor				

233rd ECS Meeting • May 13-17, 2018 • Seattle, WA

		Sunday, May 13		Monday, May 14	
Code	Symposium	AM	PM	AM	PM
Z01	General Student Poster Session <i>V. R. Subramanian,</i> <i>K. B. Sundaram, V. Chaitanya,</i> <i>P. Pharkya, A. H. Suroviec</i> All Divisions				
Z02	Nanotechnology General Session <i>O. Leonte, Z. Chen, C. Bock,</i> <i>J. E. Koehne</i> All Divisions, Interdisciplinary Science and Technology Subcommittee				
Z03	Solid State Topics General Session <i>K. B. Sundaram, O. Leonte,</i> <i>H. Iwai, M. T. Carter, M. Tao</i> Dielectric Science and Technology, Electronics and Photonics, Energy Technology, Luminescence and Display Materials, Nanocarbons, Organic and Biological Electrochemistry, Sensor				

all rooms at Washington State Convention Center

Tuesday, May 15		Wednesday, May 16		Thursday, May 17	
AM	PM	AM	PM	AM	PM
	Posters 2511-2613 Ballroom 6ABC, 6th Floor				
		Abst 2614-2622 Room 309, 3rd Floor	Abst 2623-2633 Room 309, 3rd Floor Posters 2634-2636 Ballroom 6ABC, 6th Floor		
		Abst 2637-2644 Room 307, 3rd Floor	Abst 2645-2649 Room 307, 3rd Floor Posters 2650-2654 Ballroom 6ABC, 6th Floor		

Technical Sessions

SUNDAY, MAY 13

Highlight

- 1330h..... Industrial Electrochemistry and Electrochemical Engineering Division Student Achievement Award – Rm 607, WSCC
- 1900h..... Opening Reception – 4th Floor Atrium Lobby, WSCC

A01

Battery and Energy Technology Joint General Session

Battery / Energy Technology

Room 607, Washington State Convention Center

Electrolytes – 08:00 – 12:20

Co-Chairs: Wyatt Tenhaeff, Jennifer L. M. Rupp, and Mani Manivannan

- 08:00 1 Solid State Li-Garnet Batteries: On New Phase-Discoveries, Interface Engineering and Playing with Device Electrochemistry – J. L. M. Rupp (Massachusetts Institute of Technology)
- 08:20 2 Understanding the Unique Solvation Structure of Organosilicon-Based Electrolytes for Lithium Ion Batteries – M. L. Usrey (Silatronix), A. Peña Hueso (Silatronix, Inc.), P. Du, L. Zhou (Silatronix), T. Johnson (Silatronix, Inc.), R. J. Hamers (University of Wisconsin-Madison), and R. West (Silatronix, Inc.)
- 08:40 3 High-Performance Solid-State Battery Enabled By a Stabilized Plastic-Crystal Interlayer – Z. Lu and F. Ciucci (The Hong Kong University of Science and Technology)
- 09:00 4 Development of Low Cost Printable All Solid State Lithium Microbatteries Incorporating Photo-Polymerized Ionogel As Electrolyte – D. Aidoud, N. Rousseau, P. E. Delannoy (IMN, CNRS/University of Nantes), D. Guy-Bouyssou, F. Pierre (ST Microelectronics), D. Guyomard, J. Le Bideau, and B. Lestriez (IMN, CNRS/University of Nantes)
- 09:20 5 Electrochemomechanics in Doped Garnet Lithium-Ion Conductors – G. Li and C. W. Monroe (Department of Engineering Science, University of Oxford)
- 09:40 6 Suppression of Dendrites in Lithium Sulfur Batteries Using a Composite Polymer Electrolyte (CPE) – B. Gattu, P. Murugavel Shanthi, P. Thanapisitikul, B. A. Day, M. K. Datta, O. I. Velikokhatnyi, and P. N. Kumta (University of Pittsburgh)
- 10:00 Break
- 10:20 7 Novel Nitrile-Bearing Polymer Electrolytes for Lithium Batteries – W. Tenhaeff and Z. Li (University of Rochester)

- 10:40 8 Shear-Thickening Electrolytes for Li-Ion Batteries – R. L. Sacci (Oak Ridge National Laboratory), B. H. Shen, W. Tenhaeff (University of Rochester), and G. M. Veith (Oak Ridge National Laboratory)
- 11:00 9 Safe Impact Resistant Electrolytes (SAFIRE) – G. M. Veith, B. Armstrong, S. Kalnaus, H. Wang (Oak Ridge National Laboratory), and W. Tenhaeff (University of Rochester)
- 11:20 10 Structure-Electrochemical Property Relationships of Lipons Thin-Films Electrolytes for All Solid-State Microbatteries – P. Morin, L. Le Van-Jodin (Univ. Grenoble Alpes, CEA, LETI, LMBE, F-38000 Grenoble), A. Benayad (Univ. Grenoble Alpes, CEA, LITEN, F-38000 Grenoble), and R. Bouchet (LEPMI Laboratory, Université Grenoble Alpes-CNRS)
- 11:40 11 Exploring Alternative Polymer Compositions for Highly Conductive Solid Polymer Composite Electrolytes – B. H. Shen and W. Tenhaeff (University of Rochester)
- 12:00 12 Widened Voltage Window for Aqueous Li-Ion Batteries with Low Electrolyte Concentrations – Y. H. Lin, J. Luo, and N. L. Wu (National Taiwan University)

Industrial Electrochemistry and Electrochemical Engineering Division Student Achievement Award Address – 13:30 – 14:10

Co-Chairs: Loraine Torres-Castro and Mani Manivannan

- 13:30 13 (*Industrial Electrochemistry and Electrochemical Engineering Division Student Achievement Award Address*) Mitigating Ionic and Water Transport through Polymeric Membranes in All-Vanadium Redox Flow Batteries Via Design, Engineering, and Prototyping Novel Asymmetric Cell Topologies – Y. Ashraf Gandomi (Dep. of Mechanical Engineering, University of Tennessee), D. Aaron, and M. M. Mench (University of Tennessee)

Electrocatalysts/Redox Flow/PEM – 14:10 – 17:50

Co-Chairs: S. R. Narayan and Michael J. Aziz

- 14:10 14 Durability of PEMFC Electrodes and Reduction of Pt Loading – P. Gazdzicki, J. Mitzel, D. G. Sanchez, A. M. Dreizler, M. Schulze (German Aerospace Center (DLR)), and K. A. Friedrich (University of Stuttgart, German Aerospace Center (DLR))
- 14:30 15 Cost-Effective PEM Electrolysis: The Quest to Achieve Superior Efficiencies with Reduced Investment – K. A. Friedrich, P. Lettenmeier, S. Stiber, A. S. Ansar, L. Wang, and A. S. Gago (German Aerospace Center (DLR))
- 14:50 16 Study on Assembly Mechanics and Its Effect on the Performance of Proton Exchange Membrane Fuel Cell – G. Hu (Zhejiang University, the University of British Columbia), C. Ji (Zhejiang University of Science and Technology), and X. Wu (Zhejiang University of Science and Technology)

15:10	17	Dynamics of Direct Hydrocarbon PEM Fuel Cells – E. H. Kong, P. D. Ronney, and G. K. S. Prakash (University of Southern California)	10:20	248	Novel Cell Design for an <i>Operando</i> and <i>in-Situ</i> Study of Li-Ion Battery Electrode Aging Mechanisms through SAXS and SANS Measurements – C. L. Berhaut (UGA, CEA, CNRS, INAC-SyMMES, 38000 Grenoble, France), D. Zapata Dominguez, S. Tardif, A. De Geyer, S. Pouget (UGA, CEA, CNRS, INAC-MEM, 38000 Grenoble, France), D. Aradilla, and S. Lyonnard (UGA, CEA, CNRS, INAC-SyMMES, 38000 Grenoble, France)
15:30		Break	10:40	249	Engineering Surface-Binder Interactions in High Energy Density Nanowire Conversion Electrodes for Improved Cycle Life without Fluorinated Additives – E. P. Pandres (Chemical Engineering/University of Washington), J. Z. Olson, C. W. Schlenker, and V. C. Holmberg (University of Washington)
15:50	18	Energy Storage and Heat to Power Conversion and with Non-Aqueous All Copper Redox Flow Batteries – P. Peljo, S. Maye (Ecole Polytechnique Federale de Lausanne), and I. Atek (Ecole Polytechnique Federale de Lausanne, Université 8 Mai 1945 Guelma)	11:00		Break
16:10	19	Oxygen Reduction Reaction of Perovskite Electrocatalysts in Alkaline Media at a Rotating Disk Electrode: Mechanism Analysis – X. Jin (University of South Carolina), V. Mattick (University of South Carolina, Columbia), and K. Huang (University of South Carolina)	11:20	250	New Method Using Floating Currents for Fast and High Resolved Measurement of Calendar Life Aging Rate to Improve Prediction of Aging – M. Lewerenz, S. Käbitz, M. Knips, J. Münnix, J. Schmalstieg, A. Warnecke (RWTH Aachen University - ISEA), and D. U. Sauer (Juelich Aachen Research Alliance, JARA-Energy, Germany, RWTH Aachen University - ISEA)
16:30	20	Effects of Anionic Surfactant Sodium Dodecyl Sulfate on Electrochemical Performances of Zinc-Air Flow Batteries – S. Hosseini and S. Kheawhom (Chulalongkorn University)	11:40	251	Analyzing Multi-Modal Degradation Interplay in Li-Ion Battery Electrodes – A. Verma and P. P. Mukherjee (Purdue University)
16:50	21	Combining Particle Tracking and Redox-Active Quinone Fluorescence within Porous Electrodes to Illuminate Local Mass Transport Properties of Aqueous Flow Batteries – A. A. Wong, M. J. Aziz, and S. Rubinstein (Harvard School of Engineering and Applied Sciences)	12:00	252	The Role of Cathode Architecture in Conversion Reaction Chemistries – D. Tozier (California Institute of Technology), V. Giordani, J. Uddin, H. Tan, G. V. Chase, D. Addison (Liox Power, Inc.), and J. R. Greer (California Institute of Technology)
17:10	22	Quinone-Based Aqueous Redox Flow Battery with Record Temporal Capacity Retention Rate – K. Lin (Harvard Department of Chemistry and Chemical Biology), D. G. Kwabi, M. A. Goulet (Harvard School of Engineering and Applied Sciences), E. Kerr (Harvard Department of Chemistry and Chemical Biology), D. Pollack (Harvard School of Engineering and Applied Sciences), R. G. Gordon (Harvard Department of Chemistry and Chemical Biology), and M. J. Aziz (Harvard School of Engineering and Applied Sciences)	12:20	253	Evaluation of Thick Electrode Architectures for High Energy Density Li-Ion Batteries – M. Wood, J. Li, D. L. Wood III, C. Daniel (Oak Ridge National Laboratory), A. R. Dunlop, B. J. Polzin, A. N. Jansen, and G. Krumdick (Argonne National Laboratory)
17:30	23	Rational Design of Materials for Electrocatalysis Energy Storage and Conversion Technologies – M. Asadi (Illinois Institute of Technology)			

Room 609, Washington State Convention Center

Multivalent-Ion Batteries – 09:00 – 13:00

Co-Chairs: Krista L. Hawthorne and John T. Vaughey

09:00	254	Zinc-Ion Inserted a-MnO ₂ /Onion like Carbon (OLC) Nanorod Composite Cathode Materials for Aqueous Zn-Ion Battery – N. Palaniandy (Council for Scientific and Industrial Research, Pretoria), F. P. Nkosi (Council of Scientific and Industrial Research, Pretoria), K. Raju (Council for Scientific and Industrial Research, Pretoria), K. I. Ozoemena (University of Witwatersrand), and M. K. Mathe (Council for Scientific and Industrial Research (CSIR))
09:20	255	Crosslinked Ionomer Films for Use As Magnesium-Sulfur Battery Cathode Coatings – H. O. Ford, L. C. Merrill, and J. L. Schaefer (University of Notre Dame)

A03

Li-ion Batteries and Beyond

Battery / Physical and Analytical Electrochemistry

Room 608, Washington State Convention Center

Lithium Ion Batteries 1 – 09:00 – 12:40

Co-Chairs: Vincent C. Holmberg, Dean R. Wheeler, and Wyatt Tenhaeff

09:00	244	A Spatially-Reduced Dynamic Thermal Model for Liquid Cooling Lithium-Ion Battery Pack – D. Dan and Y. Zhang (Tsinghua University)
09:20	245	In Situ Scanning Probe Microscopy of Li-Ion Battery Cathode Materials – M. Baghgar Bostan Abad, T. Ignatova, M. W. Turvey, and P. G. Collins (Univ. of California, Irvine)
09:40	246	Using Local Volume Expansion to Design Better Charging Protocols for Lithium-Ion Batteries – F. B. Spingler, W. Wittmann, J. Sturm, and A. Jossen (Technical University of Munich)
10:00	247	The Effect of Different Mixing Processes on the Ionic and Electronic Conductivities of Li-Ion Battery Electrodes – F. Pouraghajan, A. I. Thompson, J. E. Vogel, B. A. Mazzeo, and D. R. Wheeler (Brigham Young University)

09:40	256	Insight into Mg-S Battery Mechanism – A. Vizintin, A. Robba, J. Bitenc (National Institute of Chemistry), I. Arcon (Institute Jozef Stefan, University of Nova Gorica), M. Kavcic (Institute Jozef Stefan), G. Mali (National Institute Of Chemistry), A. Randon-Vitanova (Honda R&D Europe (Deutschland) GmbH), and R. Dominko (National Institute of Chemistry)	12:20	263	Electrochemical Stability of Closo-Carborane Anions and Their Impact on Cathode Interfacial Properties – N. T. Hahn (Joint Center for Energy Storage Research, Sandia National Laboratories), T. Seguin (Joint Center for Energy Storage Research, Lawrence Berkeley National Laboratory), E. Carino, J. G. Connell (Joint Center for Energy Storage Research, Argonne National Laboratory), K. A. Persson (University of California at Berkeley, Joint Center for Energy Storage Research (JCESR)), and K. R. Zavadil (Joint Center for Energy Storage Research, Sandia National Laboratories)
10:00	257	Understanding Mg/S Batteries: The Different Electrochemistry of Lithium and Magnesium Polysulfide Solutions – G. Bieker, K. Jalkanen (MEET Battery Research Center, University of Muenster), D. Diddens (Helmholtz-Institute Muenster, IEK-12 Juelich), M. Kolek (MEET Battery Research Center, University of Muenster), M. Winter (Helmholtz-Institute Münster, IEK-12 Juelich, MEET Battery Research Center, University of Münster), and P. Bieker (MEET Battery Research Center, University of Muenster)	12:40	264	Employing Mg Powder As a Scavenger to Improve Mg Electrolytes for Mg Rechargeable Batteries – J. Luo, Y. Bi (Utah State University), and T. L. Liu (Utah State Univeristy)
10:20	258	Mg-Ion Battery Electrode: An Organic Solid's Herring Bone Structure Squeezed upon Mg-Ion Insertion – I. A. Rodríguez Pérez (Oregon State University), Y. Yuan (Argonne National Laboratory), C. Bommier, X. Wang (Oregon State University), L. Ma (Argonne National Laboratory), D. P. Leonard, M. M. Lerner, R. G. Carter (Oregon State University), T. Wu (Argonne National Laboratory), P. A. Greaney (Oregon State University, University of California, Riverside), J. Lu (Argonne National Laboratory), and X. Ji (Oregon State University)	Room 608, Washington State Convention Center		
10:40		Break	Lithium Ion Batteries 2 – 13:40 – 18:00		
11:00	259	Magnesium-Ion Cathode Materials – J. T. Vaughey (JCESR at Argonne National Laboratory), K. L. Hawthorne (Argonne National Laboratory), D. L. Proffit (JCESR at Argonne National Laboratory), K. C. Lau, S. Kim (Argonne National Laboratory), C. Liao, B. Key (JCESR at Argonne National Laboratory), and T. T. Fister (Chemical Sciences and Engineering Division)	Co-Chairs: Vincent C. Holmberg, Dean R. Wheeler and Wyatt Tenhaeff		
11:20	260	Cathode Coatings for Magnesium Ion Batteries – K. L. Hawthorne (Argonne National Laboratory), J. T. Vaughey (JCESR at Argonne National Laboratory), B. Han (Argonne National Laboratory), S. Kim (JCESR at Argonne National Laboratory), and T. T. Fister (Argonne National Laboratory)	13:40	265	Comprehensive Study on Unusual Polarization Behaviors of the LiFePO ₄ Electrode Using Mathematical Modeling – H. Kondo (Argonne National Laboratory), T. Sasaki (Toyota Central R&D Labs., Inc.), P. Barai, and V. Srinivasan (Argonne National Laboratory)
11:40	261	MgTFSI ₂ /MgCl ₂ /DME Solution Structure Analysis – M. Salama (Bar Ilan University), I. Shterenberg (Bar-Ilan University), Y. Gofer (Bar Ilan University), and D. Aurbach (Bar-Ilan University)	14:00	266	(Invited) High Energy Dry Electrode Technology – H. Duong, J. Shin, and Y. Yudi (Maxwell Technologies, Inc.)
12:00	262	Magnesium Perfluoroalkoxyaluminate As a High-Voltage Mg Electrolyte – K. C. Lau (Argonne National Laboratory, Joint Center for Energy Storage Research), N. T. Hahn (Joint Center for Energy Storage Research), T. Seguin (Lawrence Berkeley National Laboratory, Joint Center for Energy Storage Research), E. Carino (Argonne National Laboratory, Joint Center for Energy Storage Research), J. G. Connell (Joint Center for Energy Storage Research), B. J. Ingram (JCESR at Argonne National Laboratory), K. R. Zavadil (Joint Center for Energy Storage Research), K. A. Persson (University of California at Berkeley), and C. Liao (JCESR at Argonne National Laboratory)	14:40	267	Thermodynamic Model for Substitutional Materials. Application to Lithiated Graphite, Spinel Manganese Oxide, Iron Phosphate, and Layered Nickel-Manganese-Cobalt Oxide – M. W. Verbrugge, D. R. Baker (General Motors, R&D Center), B. J. Koch (General Motors Global Propulsion Systems), X. Xiao, and W. Gu (General Motors, R&D Center)
			15:00	268	Slurry Model for Understanding Fabrication of Li-Ion Battery Electrodes – M. Nikpour, J. Cordon, D. R. Wheeler, and B. Mazzeo (Brigham Young University)
			15:20		Break
			15:40	269	From the Synchrotron to the Laboratory: Recent Advancements in X-Ray Instrumentation for Electrochemical Energy Storage and Conversion – J. Gelb, S. Lewis, S. Seshadri, B. Stripe, X. Yang, D. Vine, and W. Yun (Sigray, Inc.)
			16:00	270	Ultrathin Polyelectrolytes for Solid State 3D Lithium Microbatteries – Y. Gao and W. Tenhaeff (University of Rochester)
			16:20	271	Analyzing the Importance of Particle Morphology and Heterogeneity in Li-Ion Battery Electrodes – A. N. Mistry and P. P. Mukherjee (Purdue University)
			16:40	272	Local Variation in Microstructure Causes Heterogeneity in the Conductivity of Commercial Lithium-Ion Cathode Films – J. E. Vogel, E. E. Hardy, S. Crawford, B. A. Mazzeo, and D. R. Wheeler (Brigham Young University)
			17:00	273	Modeling Chemical Heat Sources in Li-Ion Batteries for a Broader Range of Materials and Conditions – R. C. Shurtz and J. Hewson (Sandia National Laboratories)

- 17:20 274 Microstructure-Controlled 3D Electrodes for Lithium-Ion Batteries – J. Park, J. Li, X. Liang, and F. Liou (Missouri University of Science and Technology)
- 17:40 275 Examining and Controlling the Behavior of Thermal Runaway in Multi Cell Systems – J. Lamb, L. Torres-Castro, and L. A. M. Steele (Sandia National Laboratories)

Room 609, Washington State Convention Center

Lithium-Sulfur 1 – 14:00 – 18:00

Co-Chairs: Tylan S. Watkins and Petru Andrei

- 14:00 276 Tuning the Surface Properties of Li Metal Anode in Li-S Batteries Via Metal Fluoride-Based Artificial Solid Electrolyte Interphase – Y. Ren, C. Xiong, H. Jiang, L. Zeng, J. Xu, and T. Zhao (The Hong Kong University of Science and Technology)
- 14:20 277 Microscopic Structure and Electrolyte Nature Effects on Discharge Products of C-S Cathodes in Li-S Batteries – P. B. Balbuena (Department of Chemical Engineering, Texas A&M University), S. Perez-Beltran, E. P. Kamphaus, A. E. Torres, and F. A. Soto (Texas A&M University)
- 14:40 278 New Avenues into Fluorinated Organic Electrolytes for Li-S Cells – Q. J. Meisner (Florida State University, Argonne National Laboratory), T. Glossmann (Mercedes-Benz Research & Development North America, Inc.), A. Hintennach (Daimler AG), L. Zhu (Florida State University), L. Zhang, and Z. Zhang (Argonne National Laboratory)
- 15:00 279 A New, Generalized Electrolyte Donicity Model for Prediction of Reaction Pathways in Li-S Batteries – K. R. Zavadil (Joint Center for Energy Storage Research) and T. S. Watkins (Sandia National Labs)
- 15:20 280 Analysis of Precipitation Effects in Li-S Batteries: Modeling, Simulation, and Experimental Perspectives – P. Andrei (Florida A&M University and Florida State University, Aeropropulsion, Mechatronics and Energy at FSU), C. Shen, and J. P. Zheng (Florida State University)
- 15:40 281 Transport and Electrochemical Dynamics in the Li-S Battery Electrolyte – A. N. Mistry and P. P. Mukherjee (Purdue University)
- 16:00 Break
- 16:20 282 Effective Inhibition of the Polysulfide Shuttle Effect in Lithium-Sulfur Batteries By Rgo-PEDOT:PSS Coated Separators Via Air-Controlled Electrospray – J. H. Lee, S. W. Kim, and Y. L. Joo (Cornell University)
- 16:40 283 In Situ Polysulfide Detection in Lithium Sulfur Batteries – J. P. Jones (Jet Propulsion Lab., California Institute of Technology), S. C. Jones, F. C. Krause, J. Pasalic (JPL/Caltech), and R. V. Bugga (Jet Propulsion Lab., California Institute of Technology)
- 17:00 284 Modified Separator Performing Dual Physical/Chemical Roles to Inhibit Polysulfide Shuttle Resulting in Ultra-Stable Li-S Batteries – S. A. Abbas (Department of ESS, NTHU, TW), N. Kaiser (Department of Materials Science and Engineering, NTUST), P. C. Wang (Department of ESS, NTHU, TW), and C. W. Chu (Academia Sinica)

- 17:20 285 Mathematical Modeling of the Charging Process of Li-S Batteries By Incorporating the Size-Dependent Li₂S Dissolution – C. Xiong, Y. Ren, H. Jiang, L. Zeng, J. Xu, and T. Zhao (The Hong Kong University of Science and Technology)
- 17:40 286 Experimental Study on Calendaristic Degradation and Self-Discharge of Lithium-Sulfur 3.4 Ah Pouch Cells – V. Knap and D. I. Stroe (Department of Energy Technology, Aalborg University)

B01 Carbon Nanostructures for Energy Conversion and Storage

Nanocarbons / Physical and Analytical Electrochemistry
Room 201, Washington State Convention Center

Energy Storage 1 – 08:00 – 12:00

Co-Chairs: Hsing-Lin Wang and Yingying Zhang

- 08:00 619 *(Invited)* Carbon Nanomaterials for Flexible and Stretchable Devices – Y. Zhang, H. Wang, C. Wang, and M. Zhang (Tsinghua University)
- 08:20 620 Energy Storage in a Transition Metal Doped MOF Derived Carbon Nanostructure – P. C. Banerjee (Clayton, Victoria, Australia, Monash University), D. Lobo, M. Shaibani, and M. Majumder (Monash University)
- 08:40 621 Addition of Redox Additives to Ionic Liquid Electrolyte for High-Performance Supercapacitors of N-Doped Graphene Aerogel – N. Ma, N. Phattharasupakun, and M. Sawangphruk (Vidyasirimedhi Institute of Science and Technology)
- 09:00 622 All-Carbon Supercapacitor, Fullerene-Grafted 3D Graphene As Electrical Energy Storage Material – M. R. Cerón, V. Vedharathnam, P. G. Campbell, T. A. Pham, B. C. Wood, J. Biener (Lawrence Livermore National Laboratory), L. Echegoyen (The University of Texas at El Paso), and M. M. Biener (Lawrence Livermore National Laboratory)
- 09:20 623 Lithium Storage Behavior of Three-Dimensional Graphene-like Ordered Microporous Carbon Synthesized in a Zeolite Template – R. Ryo (Institute for Basic Science (IBS), Korea Advanced Institute of Science and Technology), Y. Kwon (Korea Advanced Institute of Science and Technology, Institute for Basic Science (IBS)), H. Park (Institute for Basic Science (IBS), Korea Advanced Institute of Science and Technology), K. Kim (Chonbuk National University), and J. W. Shin (Institute for Basic Science (IBS))
- 09:40 Break
- 10:00 624 *(Invited)* Flexible Li-Ion Batteries Made of Binder and Collector Free Electrodes Based on Pristine Carbon Nanotubes – A. R. Harutyunyan (Honda Research Institute USA Inc), O. A. Kuznetsov (Nanosynthesis Ltd), G. Chen (Honda Research Institute USA Inc.), and E. Pigos (Nanosynthesis Plus Ltd.)
- 10:20 625 Facile Synthesis of in-Plane Graphene Micro-Supercapacitor Using Flash Reduction – S. H. Kang, I. K. You, I. G. Kim, and J. H. Sul (Electronics and Telecommunications Research Institute)

- 10:40 **626** A Single Energy Conversion and Storage Device of Cobalt Oxide Nanosheets and N-Doped Reduced Graphene Oxide Aerogel – M. Sawangphruk (Vidyasirimedhi Institute of Science and Technology)
- 11:00 **627** Novel Multi-Dimensional Nanocarbons and Their Applications in Electrochemical Energy Storage – C. S. Lee (Korea Electronics Technology Institute) and J. H. Bae (Gachon University)
- 11:20 **628** *(Invited)* Soft Materials Approaches to Carbon Nanotubes: Gels and Composites – M. F. Islam (Carnegie Mellon University)
- 11:40 **629** Reduced Graphene Oxide As an Advanced Anode for Li-Ion Battery – J. Park, C. Perini (Georgia Institute of Technology), M. Navaei, J. Hankinson (Georgia Tech Research Institute), B. Lee, M. West, E. M. Vogel, S. W. Lee (Georgia Institute of Technology), and I. Stern (Georgia Tech Research Institute)

Energy Storage 2 – 14:00 – 15:00**Co-Chair: Mohammad F. Islam**

- 14:00 **630** *(Invited)* Functionalization of Low Dimensional Carbons for Highly Efficient Energy Storage – H. L. Wang (Southern University of Science and Technology)
- 14:20 **631** Preparation of Polymer-Derived Nitrogen-Doped Hollow Carbon Nanofiber As a Free Standing Oxygen Electrode for Li-O₂ Battery – K. H. Lim, H. Kweon, and H. Kim (Dept. of Chemical & Biomolecular Eng., Yonsei University)
- 14:40 **632** Holey Graphene for Energy Storage – R. Kanungo and J. Radich (Auburn University)

Catalysis – 15:00 – 18:00**Co-Chairs: Mohammad F. Islam and Avetik R. Harutyunyan**

- 15:00 **633** *(Invited)* Carbon Based Electrocatalysts – E. Coleman (Argonne National Laboratory), P. P. Lopes (Argonne National Laboratory), D. Strmcnik, R. Wang, N. M. Markovic, and V. Stamenkovic (Argonne National Laboratory)
- 15:20 **634** Nature of Active Sites in Nitrogen-Doped Carbon Nanostructures for Oxygen Reduction and Oxygen Evolution Reactions – K. Mamtani, D. Jain, A. C. Co, and U. S. Ozkan (The Ohio State University)
- 15:40 Break
- 16:00 **635** SWCNT Photocatalysts for Hydrogen Evolution from Water – T. Izawa, K. Nishikawa, K. Watanabe, T. Tajima (Okayama University), H. Miyake (Yamaguchi University), and Y. Takaguchi (Okayama University)
- 16:20 **636** Nitrogen-Doped 3D Graphene-like Carbon Synthesized Using a Zeolite Template As a Metal-Free Oxygen Reduction Electrocatalyst – S. W. Han (Institute for Basic Science (IBS), Korea Advanced Institute of Science and Technology), S. H. Ko (Institute for Basic Science (IBS)), Y. Kwon, J. Bang, and R. Ryoo (Institute for Basic Science (IBS), Korea Advanced Institute of Science and Technology)

- 16:40 **637** Nanowire-Templated Three-Dimensional Out-of-Plane Fuzzy Graphene as an Oxygen Reduction Reaction Catalyst – D. San Roman, R. Garg (Carnegie Mellon University, MSE), N. Lamprinakos (Carnegie Mellon University), and T. Cohen-Karni (Carnegie Mellon University, BME)
- 17:00 **638** Two Different Carbon Nanotube-Based Non-Pt Fuel Cell Catalysts with High Performance and Durability – J. Yang (Kyushu University), J. Cheng (I2CNER, Kyushu University), and N. Nakashima (WPI-I2CNER, Kyushu University)
- 17:20 **639** CVD Graphene Growth for Redox Reactions to Renewable Energy Applications – D. Ion-Ebrasu, A. Spinu-Zaulet, S. Enache, A. Soare (ICSI-Rm. Valcea), E. Carcadea (ICSI Rm. Valcea), A. Enache (ICSI-Rm.), and M. Varlam (ICSI-Rm. Valcea)
- 17:40 **640** Non Noble Metal Catalysts for the Oxygen Reduction Reaction from Mixed MOFs – J. Huang, Z. Lin (Jinan University), Y. Zhan (j), and H. Meng (Jinan University)

B02**Carbon Nanostructures in Medicine and Biology**

Nanocarbons / Organic and Biological Electrochemistry / Sensor

Room 203, Washington State Convention Center

Bioapplications of Graphene – 16:00 – 18:00**Co-Chairs: Daniel A. Heller and Tatiana DaRos**

- 16:00 **664** *(Invited)* Multiscale Topological Design of Biological Interfaces to Novel Nanocarbons – S. Rastogi, A. Kalmykov (Carnegie Mellon University, BME), R. Garg, D. San Roman (Carnegie Mellon University, MSE), and T. Cohen-Karni (Carnegie Mellon University, BME, Carnegie Mellon University, MSE)
- 16:20 **665** *(Invited)* Carbon Nanomaterials for High-Resolution, Multimodal Neural Interfaces – F. Vitale (University of Pennsylvania)
- 16:40 **666** *(Invited)* Porous Graphitic Carbon As a Smart Scaffold for Neural Stem Cells – A. Perebikovskiy, A. T. Hwu (University of California, Irvine), S. Holmberg (University of California Irvine), M. Ghazinejad, and M. J. Madou (University of California, Irvine)
- 17:00 **667** *(Invited)* Non-Covalent Functionalization of Carbon Nanomaterials for Enzyme Electrochemistry – R. P. Ramasamy (School of Chemical, Materials and Biomedical Engineering)
- 17:20 **668** Electrochemical Responses of Graphene with Biofilm Formation on Various Metallic Substrates By Using Laboratory Biofilm Reactors – H. Kanematsu (National Institute of Technology Suzuka College), K. Shindo (National Institute of Technology, Suzuka College, Japan), D. M. Barry (Clarkson University), N. Hirai, A. Ogawa, D. Kuroda, T. Kogo (National Institute of Technology Suzuka College), H. Ikegai (University of Human Arts and Sciences), and Y. Mizunoe (The Jikei University)
- 17:40 **669** Graphene Oxide-Iron Oxide Nanoconjugates for Drug Transport, Biosensing and Bimodal Fluorescence/Magnetic Resonance Imaging – R. Gonzalez-Rodriguez, E. Sizemore, and A. V. Naumov (Texas Christian University)

Catalysis and Electrocatalysis – 08:00 – 12:00**Co-Chairs: Yoshinori Naruta and Wolfgang Schoefberger**

- 08:00 959 C-H Insertions by Iron Porphyrin Carbene: Basic Mechanism and Origin of Substrate Selectivity – R. Khade and Y. Zhang (Stevens Institute of Technology)
- 08:20 960 Isolating O-O Bond Activation with Manganese Porphyrins – D. Dogutan Kiper, G. Passard, M. Qiu, C. Costentin, and D. G. Nocera (Harvard University)
- 08:40 961 Porphyrinic Metal-Organic Frameworks As Chemoselective Catalysts – C. Y. Su and L. Zhang (Sun Yat-Sen University)
- 09:00 962 Electrocatalytic Behaviour of Surface Confined Pentanethio Cobalt (II)Binuclear Phthalocyanines Towards the Oxidation of 4-Chlorophenol – S. Khene, Z. Makinde, P. Mashazi, and T. Nyokong (Rhodes University)
- 09:20 963 Charge Transfer within Metal-Organic Frameworks: The Role of Polar Node in the Electrocatalysis and Charge Storage – P. Deria (Southern Illinois University Carbondale), A. V. Wyk (SIU CHEMISTRY, Simpson College, Indianola), and T. Smith (SIU CHEMISTRY)
- 09:40 Break
- 10:00 964 Development of New CO₂ Reduction Catalysts and Construction of Efficient Electro-Reduction Systems – Y. Naruta (Inst. of Sci. and Tech. Res., Chubu University)
- 10:20 965 Pyrolysis of Co-Assembled Iron and Cobalt Porphyrin on Carbon As Highly Active Electrocatalysts Toward Oxygen Reduction – Y. Song (Dalian University of Technology)
- 10:40 966 Surprising Substituent Effect in Corroles on the Electrochemical Activation of Oxygen Reduction – L. Elbaz and N. Levy (Bar-Ilan University)
- 11:00 967 Hydrogen and Oxygen Evolution Reactions Catalyzed By Single Site Metal Porphyrins and Corroles – R. Cao (Shaanxi Normal University)
- 11:20 968 The Design of Highly Efficient Non-Precious Metal Catalysts for Oxygen Reduction, Oxygen Evolution and CO₂ fixation/Reduction – W. Schoefberger (Johannes Kepler University Linz)
- 11:40 969 Electrocatalytic Hydrogen Evolution Reaction Mediated By Co-Hangman-Xanthene-Chlorin Complexes – M. Liu, D. Dogutan, C. Costentin, and D. G. Nocera (Harvard University)

Catalysis and Electrocatalysis 2 – 14:00 – 15:00**Co-Chairs: Norbert Jux and Karl M. Kadish**

- 14:00 970 Porphyrinic Metal-Organic Frameworks for CO₂ Capture and Conversion – L. Zhang and C. Y. Su (Sun Yat-Sen University)
- 14:20 971 Anomalous Current/Voltage Behaviors of Polyoxometalate/Porphyrin Derivative Complexes – T. Ogawa, N. Nurhayati, F. Miyamoto, Y. Yamazaki (Graduate School of Science, Osaka University), T. Aoyama (Osaka University), K. I. Yamashita, and Y. Tani (Graduate School of Science, Osaka University)

- 14:40 972 Tetrapyrrolic Surface Coatings for Applications in Photoelectrosynthetic Fuel Production – G. F. Moore, A. M. Beiler, D. Khusnutdinova, and B. L. Wadsworth (Arizona State University)

Synthesis and Characterization – 15:00 – 18:00**Co-Chairs: Norbert Jux and Karl M. Kadish**

- 15:00 973 Synthesis of Carbazole-Based Porphyrin Oligomers – C. Maeda (Okayama University)
- 15:20 974 Properties and Chemistry of Planar, Anti-Aromatic, Hexapyrrolic Porphyrinoids – D. Firmansyah and C. H. Lee (Kangwon National University)
- 15:40 Break
- 16:00 975 Porphyrin-Hexabenzocoronene Systems – N. Jux, D. Lungerich, H. Hölzel, M. Ruppel, and M. Martin (Friedrich-Alexander-Universität Erlangen-Nürnberg)
- 16:20 976 Assemblies of Expanded and Contracted Oligopyrroles: On-Surface Synthesis, Reactions, and Electronic Properties – J. M. Gottfried (University of Marburg)
- 16:40 977 Electrochemistry and Spectroelectrochemistry of Cobalt Bis(phenolate)Dipyrrins – K. M. Kadish, W. Shan (University of Houston), S. Pacquelet, Y. Chang, N. Desbois, and C. Gros (Université de Bourgogne Franche-Comté)
- 17:00 978 Non-Planar Pyrrole-Fused Azacorones with Various Redox States – M. Takase (Ehime University)
- 17:20 979 Synthesis of Tetrabenzoporphyrin Complexes Bearing Peripheral Phenyl Groups – T. Okujima (Ehime University)
- 17:40 980 Synthesis, Structural, Spectral and Intriguing Electrochemical Redox Properties of π -Extended Chlorins and Porphyrins – N. Chaudhri, N. Grover, and M. Sankar (Indian Institute of Technology Roorkee)

Engineering Carbon Hybrids - Carbon Electronics 3

Dielectric Science and Technology / Battery / Electronics and Photonics / Nanocarbons / Sensor

Room 205, Washington State Convention Center

Carbon Systems for Energy Application – 10:00 – 11:40**Co-Chair: Chandra Shekhar Sharma**

- 10:00 1024 Construction of 3D Carbon Nanostructure: Carbon Nanosheets Decorated Carbon Nanofiber As a Three-Dimensional Carbon Hybrid for High Performance Lithium-Sulfur Battery – S. Feng, J. Song, D. Du, and Y. Lin (Washington State University)
- 10:20 1025 Nanowire-Templated Three-Dimensional out-of-Plane Fuzzy Graphene As Thin Film Supercapacitor – R. Garg, D. San Roman (Carnegie Mellon University, MSE), N. Lamprinakos (Carnegie Mellon University), and T. Cohen-Karni (Carnegie Mellon University, BME)
- 10:40 1026 Composites of Carbon Nanotubes and Graphene for Energy Conversion and Wearable Sensing – J. Ouyang (National University of Singapore)
- 11:00 1027 Catalytically Graphitized Nanostructured Carbon Xerogels As High Performance Anode Material for Lithium Ion Battery – M. Gaikwad, M. Kakunuri, and C. S. Sharma (Indian Institute of Technology Hyderabad)

- 11:20 **1028** Expanding the Potential Window of Aqueous Hybrid Supercapacitors with Electrostatically Sprayed Manganese Oxide Composite Cathodes – R. Agrawal, A. Rabiei Baboukani, and C. Wang (Florida International University)

Applications of Carbonaceous Materials – 14:00 – 16:00

Co-Chairs: Chunlei Wang and Bidhan Pramanick

- 14:00 **1029** Selector-Less Graphite Memristor: Intrinsic Nonlinear Behavior with Gap Design Method for Array Applications – Y. C. Chen (The University of Texas at Austin), C. Y. Lin, H. C. Huang (National Sun Yat-Sen University), X. Wu (The University of Texas at Austin), Y. F. Chang (Micron Technology), T. C. Chang (Department of Physics, National Sun Yat-Sen University), and J. C. Lee (University of Texas at Austin)
- 14:20 **1030** C-MEMS Device for Plasma Separation from Whole Blood – B. Pramanick, V. Pakira, and S. Chakraborty (Indian Institute of Technology Kharagpur)
- 14:40 **1031** Micro-Molded Glassy Carbon Electrodes for High Throughput Dielectrophoresis – S. A. Muhamed, R. Natu, D. M. Keck, M. Islam, and R. Martinez-Duarte (Clemson University)
- 15:00 **1032** Fabrication of SU-8 Based Three-Dimensional Carbon Microelectrodes Array As Anode Material for Lithium Ion Batteries – M. Suresh, M. Kakunuri, and C. S. Sharma (Indian Institute of Technology Hyderabad)
- 15:20 **1033** Enhanced Bioelectrocatalytic Reduction of O₂ By Laccase Using an Ethanol-Induced Immobilization on Nitrogen-Rich Carbon Nanofibers – E. Cho (University California, Irvine), S. Holmberg (University of California Irvine), M. Ghazinejad (Fresno State University), M. Rostro, R. Parra (Tecnologico de Monterrey), and M. J. Madou (University of California, Irvine)
- 15:40 Break

Carbonaceous Systems from Sustainable Resources – 16:00 – 17:00

Co-Chairs: Rodrigo Martinez-Duarte and Monsur Islam

- 16:00 **1034** Fabrication of Lightweight 3D Complex Shapes of Cellular Carbonaceous Material – M. Islam and R. Martinez-Duarte (Clemson University)
- 16:20 **1035** A Novel Approach for the Sustainable Synthesis of Carbon Fibers Using Light Induced Dielectrophoresis of Bacteria – D. M. Keck, J. Duncan, M. Islam, and R. Martinez-Duarte (Clemson University)
- 16:40 **1036** Bacterial Cellulose Derived Carbon Nanofibers As High Capacity Anode for Lithium-Ion Batteries – I. M. Pujitha, M. Khandelwal, and C. S. Sharma (Indian Institute of Technology Hyderabad)

104

104 Materials for Low Temperature Electrochemical Systems 4

Energy Technology / Industrial Electrochemistry and Electrochemical Engineering / Physical and Analytical Electrochemistry

Room 611, Washington State Convention Center

Oxygen Reduction Reaction – 08:30 – 12:20

Co-Chairs: Minhua Shao and Gang Wu

- 08:30 Welcoming Remarks
- 08:40 **1717** High-Throughput Activity and Performance Screening Methods for PGM-Free Catalysts – J. Park, N. Kariuki, D. J. Myers, B. T. Hohman, S. Lee (Argonne National Laboratory), H. T. Chung, U. Martinez, and P. Zelenay (Los Alamos National Laboratory)
- 09:00 **1718** High Electrocatalytic Activity of PdCu/C Toward Oxygen Reduction Reaction – Q. Gong, S. Gong, X. Cheng, J. Zheng, W. Yang, T. Zhang, and L. Huang (Xiamen University)
- 09:20 **1719** Fuel Cell Performance and Durability of Intermetallic Oxygen Reduction Catalysts – Y. T. Pan, Y. S. Kim (Los Alamos National Laboratory), J. Li, S. Sun (Brown University), and J. S. Spendelow (Los Alamos National Laboratory)
- 09:40 **1720** Controllable Synthesis of Low-Platinum Oxygen Reduction Catalysts By Modified Atomic Layer Deposition Process – D. C. Higgins (Stanford University, SLAC National Accelerator Laboratory), J. Xu, Y. Kim, M. Orazov, D. Lee, Z. Wang (Stanford University), T. Schladt, T. Graf (Volkswagen Group Research), T. F. Jaramillo, and F. Prinz (Stanford University)
- 10:00 Break
- 10:20 **1721** Nanometric Fe-substituted ZrO₂ on Carbon Black: a Novel PGM-Free ORR Catalyst for PEMFCs – M. Piana, P. Madkikar, D. Menga, G. S. Harzer, T. Mittermeier, A. Siebel, F. E. Wagner (Technical University of Munich), M. Merz, S. Schuppler, P. Nagel (Karlsruhe Institute of Technology), and H. A. Gasteiger (Technical University of Munich)
- 10:40 **1722** Size-Tunable Atomic Iron Catalysts Derived from Metal-Organic Framework for Oxygen Reduction in Acid Media – H. Zhang and G. Wu (University at Buffalo, the State University of New York)
- 11:00 **1723** Oxygen Reduction Reaction on Nitrogen and Cobalt Modified Silicon Carbide Derived Carbon in Acidic Media – P. Teppor, R. Jäger (Institute of Chemistry, University of Tartu), E. Härk (Institute of Chemistry, University of Tartu, Helmholtz-Zentrum Berlin), U. Joost (Institute of Physics, University of Tartu), I. Tallo (Institute of Chemistry, University of Tartu), P. Paiste, K. Kirsimäe (University of Tartu), and E. Lust (Institute of Chemistry, University of Tartu)
- 11:20 **1724** Investigation of the Active Site for the Oxygen Reduction Reaction on the Oxide Surface Using By in-Situ XAFS Method – T. Saida, S. Hirano, E. Niwa, F. Sato, and T. Maruyama (Meijo University)
- 11:40 **1725** Interface Engineering with Ionic Liquid Composite Materials for Efficient and Durable Electrocatalysis – Y. Li and J. D. Snyder (Drexel University)

12:00 1726 Rapid Heating Rate Reveal Particular Catalytic Properties of the Pt/rGO Synthesised By Microwave Assisted EG Reduction – X. Zhang, X. Wang, J. Cao, J. Zhou, X. Liu, and Y. Zhang (Harbin Institute of Technology)

General Electrocatalysis 1 – 14:00 – 16:00

Co-Chairs: Radenka Maric and Wei Gao

14:00 1727 Investigation of Pd and Pd-CeO₂ Based Carbon-Supported Electrocatalysts for the Electrooxidation of Borohydride in Direct Borohydride Fuel Cell – C. Lafforgue (Grenoble Alpes - CNRS - LEPMI), M. Chatenet (LEPMI, CNRS-Univ. Grenoble Alpes), R. W. Atkinson III (ASEE Postdoctoral Fellowship Program, US Naval Research Laboratory), K. Swider-Lyons (US Naval Research Laboratory), H. Miller (Istituto di Chimica dei Composti Organometallici), and D. R. Dekel (Technion Israel Institute of Technology)

14:20 1728 Ternary Pt-Rh-SnO₂ Catalyst Synthesized from Vapor Phase for Ethanol Oxidation – H. Yu (University of Connecticut, Center for Clean Energy Engineering), A. Poozhikunnath (University of Connecticut), M. B. Vukmirovic (Chemistry Department, Brookhaven National Laboratory), J. Roller (FEI Company), L. J. Bonville (Center for Clean Energy Engineering), R. R. Adzic (Chemistry Department, Brookhaven National Laboratory), and R. Maric (Center for Clean Energy Engineering)

14:40 1729 Composition Controllable Synthesis of Highly Opened PtCu Nanodendrites with Efficient Electrocatalytic Activity and Stability for Methanol Oxidation Induced By High-Index Surface and Electronic Interaction – L. Lu (Department of Chemistry, Zhejiang University)

15:00 1730 One-Pot Synthesis of Pt@TiO₂ Electrocatalysts for Methanol Oxidation – T. Unmüssig (University of Freiburg), M. Rohloff (Technical University Berlin), and A. Fischer (University of Freiburg, Technical University Berlin)

15:20 1731 Preparation and Characterization of Palladium Supported on Reduced Graphene Oxide for the Electrooxidation of Formate in the Alkaline Medium – V. Galvan, D. Glass, and G. K. S. Prakash (University of Southern California)

15:40 Break

General Electrocatalysis 2 – 16:00 – 18:20

Co-Chair: Alexey Serov

16:00 1732 Self-Supported Hierarchical Porous Metallic Aerogels Synthesized Via Spontaneous Methods As High Performance Electrocatalysts – W. Liu (Sun Yat-sen University,)

16:20 1733 Electrochemical Stability of Pt Nanoparticles Supported on a Wide Library of Carbon Supports, Either Used Bare, or Modified By Fluorination or Tin Oxide Deposits – T. Asset (University of New Mexico, Albuquerque, NM 87131, USA, CNRS, LEPMI, F-38000 Grenoble, France), Y. Ahmad (Blaise Pascal University, Fahad Bin Sultan University - Tabuk - Saudi Arabia), F. Labbé (MINES ParisTech - PERSEE), N. Batisse (Blaise Pascal University ; CNRS), M. Dubois (Blaise Pascal University), K. Guerin (CNRS), S. Berthon-Fabry (MINES Paristech - PERSEE), R. Metkemeijer (MINES ParisTech - PERSEE), L. Dubau, F. Maillard (CNRS, LEPMI, F-38000 Grenoble, France), and M. Chatenet (LEPMI, CNRS-Univ. Grenoble Alpes)

16:40 1734 Development of Electrocatalysts for Anion Exchange Membrane Fuel Cells – A. Serov, G. McCool, S. McKinney, A. Lubers (Pajarito Powder, LLC), M. Odgaard (EWII Fuel Cells LLC), D. Schlueter (EWII Fuel Cells, LLC), and B. Zulevi (Pajarito Powder LLC)

17:00 1735 Graphene Oxide Emulsions As a Catalyst Support for Metal Catalysts and Catalyst Layer Preparation: Cutting Corners with Hummer's Method – D. Glass, V. Galvan, and G. K. S. Prakash (University of Southern California)

17:20 1736 Understanding the Role of the PdCu Nanoalloys for the Enhanced Hydrogen Oxidation Reaction – L. Xin, Y. Qiu, W. Li (Iowa State University), Y. Li, M. J. Janik (The Pennsylvania State University), F. Guo, Q. Liu (Argonne National Laboratory), and Y. Ren (Advanced Photon Source, Argonne National Laboratory)

17:40 1737 Development of Ni-Based Bimetallic Electrocatalysts for Hydrogen Oxidation Reaction in Alkaline Fuel Cells – M. Manikandan, G. Singh (Norwegian University of Science and Technology), A. O. Barnett (SINTEF Materials and Chemistry), F. Seland, and S. Sunde (Norwegian University of Science and Technology)

18:00 1738 Why Pt-Ru Catalyst Works Better for Alkaline Hydrogen Oxidation Reaction? – S. Maurya, H. T. Chung (Los Alamos National Laboratory), C. Fujimoto (Sandia National Laboratory), I. Matanovic (University of New Mexico), and Y. S. Kim (Los Alamos National Laboratory)

105

Renewable Fuels via Artificial Photosynthesis or Heterocatalysis 3

Energy Technology / Organic and Biological Electrochemistry / Physical and Analytical Electrochemistry
Room 612, Washington State Convention Center

Heterocatalysis and Carbon Dioxide Conversion 1 – 08:20 – 12:20

Co-Chairs: Scott Kevin Cushing, Gang Liu, and Heli Wang

08:20 Welcoming Remarks

08:25 1820 Cleaning Industrial Waste Water with Simultaneous Power Generation Utilizing an Abiotic Fuel Cell – J. Rubio-Garcia, D. Malko, A. R. J. Kucernak, M. Kaiser, and A. Parra-Puerto (Imperial College London)

08:55	1822	Progress Towards Electrochemical Methods for Pyrolysis-Oil Hydrogenation – J. Holladay, J. A. Lopez Ruiz, J. Egbert, O. Y. Gutiérrez Tinoco, and U. Sanyal (Pacific Northwest National Laboratory)
09:10	1823	Efficient and Scalable Photo-Electrochemical Device for Solar Fuel Generation Working Under Concentrated Irradiation – S. Tembhurne, F. Nandjou (Lab. of Renewable Energy Science & Engg. (LRESE), EPFL), and S. Haussener (EPFL)
09:25	1824	Functionalized Silica Facilitated Proton Coupled Electron Transfer in Electrochemical CO ₂ Reduction on Pd – Y. Fang and J. Flake (Louisiana State University)
09:40		Break
10:00	1825	In Situ Study of Catalyst Reconstruction during Electrochemical CO ₂ Reduction – Z. Feng, M. Wang (Oregon State University), Z. Wang, Y. Wu, and H. Wang (Yale University)
10:15	1826	The Effect of Initial Chemical State of Copper Nanoparticles Towards C2 Products for Electrochemical CO ₂ Reduction – H. Jung (Korea Institute of Science and Technology), B. K. Min (Korea University), and Y. J. Hwang (Korea Institute of Science and Technology)
10:30	1827	High Index Non-Noble Metal Electrocatalysts for Electrochemical CO ₂ Reduction to C1 Products – D. H. Won (Korea Institute of Science and Technology), S. I. Woo, H. Kim (Korea Advanced Institute of Science and Technology), Y. J. Hwang (Korea Institute of Science and Technology), and B. K. Min (Korea University, Korea Institute of Science and Technology)
10:45	1828	Rutile-Anatase Core-Shell TiO ₂ Nanostructured Array for Photoelectrochemical Water Oxidation and CO ₂ Photoconversion – J. S. Yang, H. C. Chang, and J. J. Wu (National Cheng Kung University)
11:00	1829	Tuning the Composition of Bimetallic Electrodeposited Sn-Pb Catalysts for Enhanced Activity and Durability in CO ₂ Electroreduction to Formate – C. E. Moore and E. L. Gyenge (University of British Columbia)
11:15	1830	Tin Alloy Nanoparticles for Selective Electrocatalytic Reduction of Carbon Dioxide to Formate – M. R. Camilo (Institute of Chemistry of Sao Carlos) and F. H. B. Lima (IQSC - Institute of Chemistry of Sao Carlos)
11:30	1831	Ionic Liquid Functionalized Cathode Catalyst Support for Carbon Dioxide Conversion Using Proton Exchange Membrane Fuel Cell – P. S. Ramaprabhu, G. Sreetama, and G. M. Seshadhri (Indian Institute of Technology Madras)
11:45	1832	Electrocatalysis for CO ₂ Reduction: Controlling Selectivity to Oxygenates and Multicarbon Products – C. Hahn (SLAC National Accelerator Laboratory, Stanford University) and T. F. Jaramillo (Stanford University)

Carbon Dioxide Conversion 2 – 13:35 – 16:00**Co-Chairs: Jin Z. Zhang and Yun Hau Ng**

13:35	1833	<i>(Invited)</i> Coupling Solar Energy into Catalytic CO ₂ Conversion – Y. Xiong (University of Science and Technology of China)
14:00	1834	<i>(Invited)</i> A Wired Photosynthesis of Formate from Aqueous CO ₂ Using Earth Abundant Catalysts – H. Park (School of Energy Engineering)
14:25	1835	<i>(Invited)</i> Ligand-Directed CO ₂ Conversion at Bimetallic Au/Cu Nanocatalysts – D. R. Kauffman and D. R. Alfonso (National Energy Technology Laboratory)
14:50	1836	<i>(Invited)</i> Efficient Photocatalytic CO Production from CO ₂ and H ₂ O By the Aid of Artificial Photosynthesis – K. Teramura (Department of Molecular Engineering, Kyoto University)
15:15	1837	<i>(Invited)</i> Electrocatalytic Carbon Dioxide Conversion on Cu Catalyst – Y. Kwon, M. Im, J. A. Lim, D. Kim, D. Kim, H. Jung, S. M. Kim, and B. S. Kim (Korea Research Institute of Chemical Technology)
15:40		Break

Solar Water Splitting 1 – 16:00 – 17:40**Co-Chairs: Jin Z. Zhang and Yun Hau Ng**

16:00	1838	<i>(Invited)</i> Enhanced Photoelectrochemical and Photocatalytic Activities of CdS Nanowires By Surface Modification with Transition Metal Chalcogenides – J. Z. Zhang (University of California Santa Cruz), H. Wang (University of California Santa Cruz), C. Li (Wuhan University), and S. Bonabi Naghadeh (University of California Santa Cruz)
16:25	1839	<i>(Invited)</i> Understanding Photoelectrode/Catalyst Interface for Solar Water Splitting – D. Wang (Boston College)
16:50	1840	<i>(Invited)</i> Improve Electrodes' Electrochemical Performance for HER and OER By Hydrogenation Treatment – X. Chen (University of Missouri - Kansas City)
17:15	1841	<i>(Invited)</i> Development and Integration of Heterojunctions for Enhanced Solar Energy Conversion – R. A. Solarzka (Centre of New Technologies University of Warsaw), K. Bienkowski, and M. Arasimowicz (University of Warsaw)

MONDAY, MAY 14

Highlights

- 0700h..... Session Chair and Symposium Organizer Orientation Breakfast – *Rm 2AB, WSCC*
- 0800h..... Electronics and Photonics Division Award – *Rm 213, WSCC*
- 0800h..... Organic and Biological Electrochemistry Division Manuel M. Baizer Award – *Rm 213, WSCC*
- 1400h..... Nanocarbons Division SES Young Investigator Award – *Rm 201, WSCC*
- 1400h..... Energy Technology Division Research Award – *Rm 611, WSCC*
- 1700h..... Plenary Session and the ECS Lecture – *Ballroom 6E, WSCC*
- 1800h..... Technical Exhibit, General Poster Session, and Career Expo – *Ballroom 6ABC, WSCC*
- 2000h..... Student Mixer – *Grand Ballroom B, Sheraton*

A01

Battery and Energy Technology Joint General Session Battery / Energy Technology

Room 604, Washington State Convention Center

Energy Storage Materials - New Approaches 1 – 08:00 – 12:20

Co-Chairs: Kyle Christopher Smith and Daiwon Choi

- 08:00 24 Electrochemical Thermoelectric Coefficient of Prussian Blue Analogues – Y. Fukuzumi, W. Kobayashi, H. Niwa, and Y. Moritomo (University of Tsukuba)
- 08:20 25 Portable Generator Based on Direct-Flame Metal-Supported Solid Oxide Fuel Cells (MS-SOFCs) – M. C. Tucker (Lawrence Berkeley National Laboratory)
- 08:40 26 Lifecycle Comparison and Degradation Mechanisms of Li-Ion Battery Chemistries Under Grid and Electric Vehicle Duty Cycle Combinations – D. Choi, A. J. Crawford, V. Viswanathan, Q. Huang, M. C. Kintner-Meyer, J. G. Zhang, D. Reed, and V. Sprenkle (Pacific Northwest National Laboratory)
- 09:00 27 Facile Synthesis of Large Area Two Dimensional Layers of Transition Metal Nitride and Their Use As Insertion Electrodes – S. Joshi, Q. Wang, A. Puntambekar, and V. Chakrapani (Rensselaer Polytechnic Institute)
- 09:20 28 Thermal Power Generation with Use of Battery-Type Cell – Y. Moritomo (University of Tsukuba), T. Shibata (National Institute of Technology, Gunma College), Y. Fukuzumi, and W. Kobayashi (University of Tsukuba)

- 09:40 29 Tin-Polyester/Polyimide Hybrid System As Flexible Free- Standing Film with Tunable Dielectric Constant for Energy Storage Application – S. Nasreen, G. M. Treich, M. Tefferi, M. L. Baczkowski, C. Anastasia, Y. Cao, and G. A. Sotzing (University of Connecticut)
- 10:00 30 Coin-Type Cell Design and Engineering of Its Compartments for Rechargeable Seawater Battery – J. Han and Y. Kim (Ulsan National Institute of Science and Technology)
- 10:20 31 Safety Enhanced, Block Copolymer Derived Nanoporous Battery Separators – W. Xing (ADA Technologies, Inc.)
- 10:40 32 Probing the Role of Electronic Conduction during the Apparent Diffusion of Cations in Nickel Hexacyanoferrate – K. C. Smith (Mechanical Science and Engineering UIUC, College of Engineering, UIUC) and A. Shrivastava (Materials Science and Engineering, UIUC)
- 11:00 33 Improving a Molten Carbonate Fuel Cell Matrix Strength By Fiber Reinforcing – J. Milewski, T. Wejrzanowski (Warsaw University of Technology), K. Z. Fung (National Cheng Kung University), B. H. C. Liu (NCKU), L. Szabłowski (Warsaw University of Technology), R. Baron, A. Szcześniak (Warsaw University of Technology), S. Y. Tsai (Research Ctr for Energy Tech/Strategy, Nat Cheng Kung U), C. T. Ni (Dept. of Materials Science and Engg, National Cheng Kung U), and J. Y. Tang (National Cheng Kung University)
- 11:20 34 Temperature Path Dependent Voltage and Thermal Expansion Hysteresis in Li-Ion Cells – I. Zilberman, F. B. Spingler (Technical University of Munich), A. Rheinfeld (Technical University of Munich (TUM), EES), and A. Jossen (Technical University of Munich)
- 11:40 35 Lattice Templating and Galvanic Coupling Effects on the Electrochemical Performance of Core/Shell Battery Materials – E. Moazzen, E. V. Timofeeva, and C. U. Segre (Illinois Institute of Technology)
- 12:00 36 Battery-like Response in Solid Oxide Fuel Cell Device – X. Guan (ShanghaiTech University), J. Jiang (Harvard University), and S. Ramanathan (Purdue)

Room 607, Washington State Convention Center

Lithium Battery-Anodes – 08:00 – 12:30

Co-Chairs: Mani Manivannan and Marca Doeff

- 08:00 37 (Invited) High Energy Density Energy Storage Systems – Strategies for an Energy Independent Future – P. N. Kumta (University of Pittsburgh)
- 08:30 38 Understanding Silicon Electrode Surface Reactivity through Model Silicate Thin Film Layers – J. Coyle (University of Colorado-Boulder), C. A. Appleby (Sandia National Laboratories), G. M. Veith (Oak Ridge National Laboratory), and C. R. Stoldt (University of Colorado-Boulder)
- 08:50 39 Surface Patterning of Lithium Metal: Novel Approach to Stable Li Metal Anodes – P. Thanapisitikul, B. Gattu, P. M. Shanthi, B. A. Day, M. K. Datta, and P. N. Kumta (University of Pittsburgh)

09:10	40	Surface Modification of Porous Foam Electrodes: Stabilization of Solid Electrolyte Interphase Formation in Li-Metal Batteries – B. A. Day, B. Gattu, P. M. Shanthi, M. K. Datta, and P. N. Kumta (University of Pittsburgh)			
09:30	41	The Mechanism of Transformation of Graphite Electrode Materials in Lithium-ion Batteries After Cycling – G. Liu (Lawrence Berkeley National Laboratory), K. Dai (Northeastern University), and N. Lin (Department of Chemistry, Tsinghua University)			
09:50	42	Enhanced Li Metal Anode Stability By 3D Porous Nickel Substrate – L. Yu, N. L. Canfield, S. Chen, H. Lee, M. H. Engelhard, Q. Li, J. Liu, W. Xu, and J. G. Zhang (Pacific Northwest National Laboratory)			
10:10	43	Facile, Green, Low-Cost Fabrication of Silicon/Carbon Nanocomposites for Lithium-Ion Battery Anode Applications – M. Ashuri, Q. He, and L. Shaw (Illinois Institute of Technology, Wanger Institute for Sustainable Energy Research)			
10:30	44	Tungsten Trioxide Nanoparticles-Carbon Nanohorns Composite As Anode Material for Lithium-Ion Batteries – S. R. Sahu (ARCI, Indian Institute of Technology Madras), V. R. Rikka (ARCI), H. Prathap (Indian Institute of Technology Madras), R. Gopalan, and R. Prakash (ARCI)			
10:50	45	Single-Step Deposition of Nanostructured Fe ₂ O ₃ as Anode for Li-Ion Batteries – Y. Wang (University of Connecticut), J. Roller (FEI Company), and R. Maric (University of Connecticut)			
11:10	46	Characterization and Electrochemical Modeling of Advanced SiO Anode Material for Li-Ion Batteries – K. Pan (The Ohio State University), F. Zou (Department of Polymer Science, University of Akron), G. Fan, M. Canova, J. H. Kim (The Ohio State University), and Y. Zhu (The University of Akron)			
11:30	47	Binder Free Silicon/Graphite Anode & Solid Inorganic Electrolyte: Breakthrough in Li-Ion Batteries. Materials, Technologies, Equipment for Production – E. M. Shembel (Enerize Corporation), V. I. Redko (Enerize Corporation, FL, USA), T. V. Pastushkin (Enerize Corporation, FL USA), A. V. Markevich, O. Kolomojets, and I. M. Maksuta (Ukrainian State University of Chemical Technology)			
11:50	48	Analysis of Graphite Materials for Fast-Charging Capabilities in Lithium-Ion Batteries – J. Kirner, Y. Qin, X. Su, L. Zhang (Argonne National Laboratory), Y. Li (Huawei Technologies Co., LTD), and W. Lu (Argonne National Laboratory)			
12:10	49	Probing the Nanoscale Heterogeneity of SEI on Silicon Anode Using Tip Enhanced Raman Spectroscopy (TERS) – G. Yang, D. N. Voylov, M. Naguib, R. E. Ruther, G. M. Veith (Oak Ridge National Laboratory), N. V. Lavrik (oak ridge national laboratory), V. Bocharova (Oak Ridge National Laboratory), A. P. Sokolov (University of Tennessee), and J. Nanda (Oak Ridge National Laboratory)			
					Lithium Battery-Cathodes – 13:00 – 16:00
					Co-Chairs: Rahul Singhal and Mani Manivannan
			13:00	59	Evolution of Nickel, Manganese, and Cobalt Hydroxide Precursor for Li-Ion Battery Cathode Materials in Co-Precipitation Reactions – Z. Feng, P. Barai, J. Gim, L. Ge, H. Gao, and V. Srinivasan (Argonne National Laboratory)
			13:20	60	Porous Inorganic Framework Materials - Efficient Polysulfide Trapping Agents for Lithium Sulfur Batteries – P. Murugavel Shanthi, B. Gattu, M. K. Datta, O. I. Velikokhatnyi, and P. N. Kumta (University of Pittsburgh)
			13:40	61	Chemical Lithiation of Pre-Encapsulated Sulfur Using Lithium Triethylborohydride for Lithium Sulfur Batteries – R. Glaser, B. Johnson, G. Yushin (Georgia Institute of Technology), and M. Sanghadasa (AMRDEC, US Army RDECOM)
			14:00	62	Thick Binder-Free Electrodes for Li-Ion Battery Fabricated Using Templating Approach and Spark Plasma Sintering Reveals High Areal Capacity – R. Elango (Université Picardie Jules Verne), A. Demortiere (LRCS Amiens - CNRS), V. De Andrade (Argonne National Laboratory), M. Morcrette (Laboratoire de Réactivité et de Chimie des Solides), and V. Seznec (Réseau de Stockage Electrochimique de l'Energie, RS2E, Laboratoire de Réactivité et de Chimie des Solides)
			14:20	63	Correlating Gas Evolution and Oxygen Release to the Electrochemical Full-Cell Performance of Lithium-Rich Layered Oxides – T. Teufl (Technische Universität München, BASF SE), B. Strehle (Technische Universität München), D. Pritzl, H. A. Gasteiger (Technical University of Munich), and M. Mendez (BASF SE)
			14:40	64	Trench-Wall Carbon Nanotube Sponges As Effective Dual Hosts for High-Areal-Capacity Sulfur Cathodes and Lithium Anodes – G. Yang, J. Tan, and C. Yu (Texas A&M University)
			15:00	65	Correlating Trajectories in Voltage Fading to Molecular Transformation in Ramsdellite MnO ₂ Cathode of Lithium Ion Battery – P. K. Gupta, A. Bhandari, A. Sharma, J. Bhattacharya, and R. G. Pala (Indian Institute of Technology Kanpur)
			15:20	66	Theoretical Understanding and Experimental Suppression of the Capacity Degradation of Ni-Rich Layered Oxide Cathode Materials for Li Ion Battery – F. Kong, C. Liang, R. C. Longo, Y. Zheng (The University of Texas at Dallas), V. D. Wheeler, J. Wollmershauser, B. Feigelson (U.S. Naval Research Laboratory), and K. Cho (The University of Texas at Dallas)
			15:40	67	Transition Metal Segregation and Phase Transformations on the Surfaces of Layered Li(Ni _{1-x-y} Mn _x Co _y)O ₂ (NMC) Cathode Materials for Li-Ion Batteries – J. Garcia (Argonne National Laboratory), B. Han (Massachusetts Institute of Technology), B. Key, J. T. Vaughey (JCESR at Argonne National Laboratory), F. Dogan (Argonne National Lab), and H. Iddir (Argonne National Laboratory)

Na/Zn Battery – 13:00 – 16:00**Co-Chairs: Ramaraja P. Ramasamy and Jihui Yang**

- 13:00 50 Yolk-Shell Structured Sb@C Anodes for High Energy Na-Ion Batteries – J. Song (Washington State University, Pacific Northwest National Laboratory), P. Yan, L. Luo, C. Wang (Pacific Northwest National Laboratory), Y. Lin (Washington State University), and X. Li (Pacific Northwest National Laboratory)
- 13:20 51 Cycling Performance of Sodium Ion Battery Comprised of Naphthalene Based Polyimide/MWCNT Composite Cathode and Highly Porous Polyvinylidene Fluoride Separator Membrane – J. Manuel (University of Georgia) and R. P. Ramasamy (University of Georgia, 30602)
- 13:40 52 Manganese Dioxide Nanoflowers Decorated Reduced Graphene Oxide As High-Performance Air Cathode for Zinc-Air Batteries – P. Teabnamang, W. Lao-atiman, and S. Kheawhom (Chulalongkorn University)
- 14:00 53 Electrochemically Produced Zinc Oxide Electrode in Rechargeable Alkaline Batteries – S. Kolhekar (CUNY Energy Institute at the City College of New York), D. Turney (City University of New York), G. G. Yadav, M. Nyce, and S. Banerjee (CUNY Energy Institute at the City College of New York)
- 14:20 54 Atomic Layer Deposition of Catalytic Manganese Oxide for High Surface Area Zinc-Air Battery Electrodes – M. P. Clark, K. Cadien, and D. G. Ivey (University of Alberta)
- 14:40 55 Rechargeable Zinc-Ion Batteries Based on Deep Eutectic Solvent – W. Kao-Ian and S. Kheawhom (Chulalongkorn University)
- 15:00 56 Water-Lubricated Intercalation in $V_2O_5 \cdot nH_2O$ for High-Capacity and High-Rate Aqueous Rechargeable Zinc Batteries – M. Yan (University of Washington), P. He, L. Mai (Wuhan University of Technology), and J. Yang (University of Washington)
- 15:20 57 Understanding the Dynamics of Primary Zn-MnO₂ Alkaline Battery Gassing with Operando Visualization and Pressure Cells – E. Faegh (University of South Carolina), T. J. Omasta (University of Connecticut), M. Hull, M. Zuraw (Duracell), and W. E. Mustain (University of South Carolina)
- 15:40 58 In-Depth Study of Zn Electrode Passivation in Alkaline Solutions for Zn Batteries – R. M. Wittman (Oak Ridge National Laboratory), R. L. Sacci (University of Victoria*), and T. A. Zawodzinski Jr. (University of Tennessee-Knoxville)
- 70 High Performance Composite Nanofibers-Based Piezoelectric Energy Harvesters – J. W. Kim, D. B. Kim, H. J. Choi, S. W. Kim, Y. Jung, C. S. Han, and Y. S. Cho (Yonsei University)
- 71 Effect of Zr Substitution for Ti on BaZr_xTi_{1-x}O₃ Thin Films for Energy Storage Applications – A. A. Instan (Dept. of Physics, University of Puerto Rico, San Juan PR USA), S. P. Pavunny (U.S. Naval Research Laboratory, Washington DC), M. K. Bhattarai, and R. S. Katiyar (Dept. of Physics, University of Puerto Rico, San Juan PR USA)
- 72 The Hybrid Membrane Based on Sulfonated Poly(Phenylene Oxide) (sPPO) and Silica With Low Permeability for Vanadium Redox Flow Battery – H. Y. Jung, J. H. Jung, and M. H. Lim (Chonnam National University)
- 73 The Chemical stability of Commercial Polymer Electrolyte Membrane for Vanadium Redox Flow Battery (VRFB) – H. Y. Jung, M. H. Lim, and J. H. Jung (Chonnam National University)
- 74 Size-Controlled Carbon Catalysts Derived from Metal-Organic Frameworks for Non-Aqueous Li-Air Battery – Y. He, J. Wang (University at Buffalo), and G. Wu (University at Buffalo, the State University of New York)
- 75 A Parametric Study of Sensitivity Analysis of All-Vanadium Redox-Flow Battery Systems – M. Al-yasiri (Missouri University of Science and Technology)
- 76 Investigation of Waste Heat Accumulation and Internal Resistance of AA NiMH Cells – D. J. Donnelly (Salve Regina University), C. J. Patrissi (Naval Undersea Warfare Center Newport), and T. M. Arruda (Salve Regina University)
- 77 Texture in Conversion Reaction and Electrochemical Properties of Nanoparticle Clusters – N. X. Tran, L. A. Leban (Xavier University of Louisiana), M. C. Thomas (University of Texas at Dallas), Y. Yang, and L. Meda (Xavier University of Louisiana)
- 78 Amorphous Niobium Oxide Thin Film As Anode for High Rate Lithium Ion Battery – K. A. Kimble, J. I. Adams, A. A. Abiade, N. X. Tran, J. W. Adkins (Xavier University of Louisiana), A. Dangerfield (University of Texas at Dallas), and L. Meda (Xavier University of Louisiana)
- 79 Chemical Vapor Synthesis and Electrochemical Studies of Ru⁴⁺O₂ Reactions with Lithium Ion – A. R. Merrell, J. A. Williams, J. W. Adkins, L. D. Douglas (Xavier University of Louisiana), A. Dangerfield (University of Texas at Dallas), Y. Yang, and L. Meda (Xavier University of Louisiana)
- 80 Understanding the Role of Aluminum in Positive Electrode Material Structures – B. Han (Massachusetts Institute of Technology), B. Key, J. T. Vaughey (JCESR at Argonne National Laboratory), and F. Dogan (Argonne National Lab)

Ballroom 6ABC, Washington State Convention Center**A01 Poster Session – 18:00 – 20:00**

- 68 Direct Correlations of Grain Boundary Potentials to Dielectric Properties of Doped CaCu₃Ti₄O₁₂ Thin Films – C. S. Han, A. Cho, J. W. Kim, and Y. S. Cho (Yonsei University)
- 69 Low Frequency Piezoelectric Energy Harvesters Based on Pb-Free Thin Films – D. B. Kim, H. C. Oh, C. S. Han, and Y. S. Cho (Yonsei University)

- **81** Hierarchical MoO₂@TiO₂-Carbon Nanostructure Enable Ultrafast and High-Capacity Na-Ion Storage By Enhanced Pseudocapacitance – C. Ma (Shanghai Electrochemical Energy Devices Research Centre), C. Deng (Boise State University), Y. Xie (Argonne National Laboratory), H. Che (Sinopoly Battery Research Center Limited), Z. F. Ma (Shanghai Jiaotong University), and C. Xiong (Boise State University)
- **82** Stretchable Array of Wirelessly Charged High Performance Micro-Supercapacitors with Solar Cells for Wireless Powering of the Integrated Strain Sensor – J. Yun, C. Song, H. Park, Y. R. Jeong, S. W. Jin, S. Y. Oh, and J. S. Ha (Korea University)
- **83** Effect of High Current Density on the Performance in a Molten Carbonate Fuel Cell – C. G. Lee (Hanbat National University)
- **84** Room-Temperature, Ambient-Pressure Chemical Synthesis of Amine-Functionalized Hierarchical Carbon-Sulfur Composites for Lithium-Sulfur Battery Cathodes – C. Chae (Korea Research Institute of Chemical Technology), J. Y. Kim (KRICT), Y. Choi (KRCIT), and S. Jeong (Korea Research Institute of Chemical Technology)
- **85** Modeling the Effect of Fast Charge Protocol on the Thermal Behavior of a Lithium-Ion Battery for Electric Vehicle Applications – D. Lee, B. Koo, and C. B. Shin (Department of Energy Systems Research, Ajou University)
- **86** Modeling the Effect of Aging on the Performance Decay of a Lithium-Ion Battery during Charge-Discharge Cycling – J. Cho, M. K. Lee, B. Koo, and C. B. Shin (Department of Energy Systems Research, Ajou University)
- **87** Tridimensional Interconnected Nickel-Iron Alloy Structures As Cathode Materials for Sodium–Metal Halide Batteries – C. M. Silva (Federal University for Latin American Integration, Itaipu Technological Park (PTI)), J. R. C. Salgado, R. L. D. O. Basso (Federal University for Latin American Integration), L. C. Battirola, and D. A. Cantane (Itaipu Technological Park (PTI))
- **88** Toward a Dendrite Free, Powder Compact-Based Solid Electrolyte Lithium Metal Battery: Interfacial Modification – R. Zhao, R. Gebhardt, A. Whale, G. Hu (Iowa state University), and S. W. Martin (Iowa State University)
- **89** An Examination of the Factors That Influence Primary Battery Longevity Performance Under Multiple-Cell Vs Single-Cell Testing Conditions – J. Joubert and R. Iveson (Duracell)
- **90** Poly(propylene carbonate) Interpenetrating Cross-Linked Poly(ethylene glycol) Based Polymer Electrolyte for Solid-State Lithium Batteries – J. A. Williams, Y. Yang, G. P. Pandey, and L. Meda (Xavier University of Louisiana)
- **91** Advanced Cycle Life Model Based on 18650 Lithium-Ion Battery Cells – J. Park, S. Byun (DGIST), J. Park (Hanbat National University), W. A. Appiah (DGIST), M. H. Ryou (Hanbat National University), and Y. M. Lee (DGIST)
- **92** Polymeric Binder Distribution within LiCoO₂ Electrodes By Using a Surface and Interfacial Cutting Analysis System (SAICAS) – S. Byun, Y. Roh (DGIST), S. Kim, D. Jin (Hanbat National University), J. Choi (University of Wollongong), M. H. Ryou (Hanbat National University), and Y. M. Lee (DGIST)
- **93** Quantification of Ion and Solvent Content within Charged Micropores of Bimodal Carbide-Derived Carbons Using Small Angle Neutron Scattering – R. L. Sacci (Oak Ridge National Laboratory), K. L. Van Aken (A. J. Drexel Nanomaterials Institute), M. W. Thompson (Vanderbilt University), and G. Rother (Oak Ridge National Laboratory)
- **94** Evaluation of HNa[Cu₂(Ac)₆] As a Cathode Material for Li-Ion Batteries – H. Zhou (University of Arkansas), Z. Liu (Dalian University of Technology), S. S. Ang (University of Arkansas), and J. J. Zhang (Dalian University of Technology)
- **95** Enhanced Cycling Stability of SiO_x/Si/Nickel Foam Thin Film Anodes for Lithium Ion Batteries – K. F. Chiu, K. C. Li, and H. J. Leu (Feng Chia University)
- **96** Synthesis of Ternary NiCo-MnO₂ Nanocomposite and Its Application As a Novel High Energy Supercapattery Device – K. O. Oyedotun, M. Madito, D. Momodu, A. Mirghni, T. Masikhwa, and N. Manyala (University of Pretoria)
- **97** Implications of Cation-Disordered Atomic Structure on Electrochemical Performance of LiNi_{0.5}Co_{0.2}Mn_{0.3}O₂ Cathode Material – J. H. Shim (Sungkyunkwan University (SKKU).)
- **98** A Three-Dimensional N/Co-Doped Macroporous Carbon Interweaving with Carbon Nanotubes As Excellent Bifunctional Catalysts for Zn-Air Batteries – W. Guo (Wuhan University of Technology)
- **99** La, Rb and Ba Additions on the Effect of Oxygen Reduction in Molten Alkali Carbonates – C. G. Lee (Hanbat National University)
- **100** Development of Electrolyte for Negative-Limited LiNi_{0.5}Mn_{1.5}O₄ / Li₄Ti₃O₁₂ Li Ion Cells – Y. Gogyo, R. Fukuta, T. Onuma, T. Nishimura, and K. Kojima (Hitachi Chemical Co.,Ltd.)
- **101** Cycling Performance of Vanadium Redox Flow Battery Using Anion Exchange Membrane Based on Im-bPPO – M. H. Lim and H. Y. Jung (Chonnam National University)
- **102** Li-Ion Battery Applications of Nanocellulose Based High Aspect Ratio Nanostructures – C. Youn (Sejong University), H. Kim, Y. Kim (Ulsan National Institute of Science and Technology), and T. Choi (Sejong University)
- **103** Growth of V₂O₃ Films for Electrochromic and Battery Applications by Pulsed Chemical Vapour Deposition – I. I. Kazadojev, S. O'Brien, L. P. Ryan, M. Modreanu (Tyndall National Institute), P. Osiceanu (Institute of Physical Chemistry I.G. Murgulescu), S. Somacescu (Institute of Physical Chemistry, I.G. Murgulescu), D. Vernardou (Technological Educational Institute of Crete), M. E. Pemble (Department of Chemistry - UCC, Tyndall National Institute), and I. M. Povey (Tyndall National Institute)

Room 609, Washington State Convention Center

Lithium-Sulfur 2 – 08:00 – 12:00

Co-Chairs: Vijayakumar Murugesan, Yue Qi, and Ying Ma

- 104 Crystal Plane Effects on Charge Storage in Cerium Oxide Nano Structures – A. Jeyaranjan (University of Central Florida), T. S. Sakhthivel (Advanced Materials Processing and Analysis Center), D. C. Sayle (University of Kent, Canterbury, CT2 7NH, UK), and S. Seal (NanoScience Technology Center)
 - 105 Effect of Pre-Oxidation on Thermoelectric Properties of Bismuth Telluride Compacted By Spark Plasma Sintering – J. Kim (Ajou University), L. T. Duy, S. Y. Lee, and H. Seo (Ajou University)
 - 106 NMR Transport Study of LiPF_6 and NaPF_6 in Glymes for Use in Supercapacitors – D. J. Morales, M. Gobet, S. Greenbaum (Department of Physics and Astronomy, Hunter College, CUNY), R. E. Ruther, and J. Nanda (Oak Ridge National Laboratory)
 - 107 Ionic Conductivity and Thermal Stability of Lithium Salt / KF-HF Electrolytes for Thermal Batteries – A. Yazdani (Department of Chemical and Biomolecular Engineering), M. Sanghadasa (AMRDEC, US Army RDECOM), and G. G. Botte (Ohio University)
 - 108 Protecting Battery and Energy Technology: Trade Secrets – K. Aruda (Finnegan, Henderson, Farabow, Garrett & Dunner LLP)
 - 109 Assessing Performance Goals and Operational Limitations across Capacitive Deionization Technologies – S. M. Hand (Civil and Environmental Engineering, University of Illinois at Urbana-Champaign), X. Shang, K. C. Smith (Mechanical Science and Engineering, University of Illinois at Urbana-Champaign), and R. D. Cusick (Civil and Environmental Engineering, University of Illinois at Urbana-Champaign)
 - 110 Electrochemical Fabrication of Nanostructured Thin-Film for Renewable Energy Applications – Y. Yang (University of Central Florida)
 - 111 High Energy Rechargeable Metal Free Na-Ion Seawater Batteries: Phosphorus/Carbon Composite As a Promising Anode Material – Y. Kim, S. M. Hwang, H. Yu, and Y. Kim (Ulsan National Institute of Science and Technology)
 - 112 Design Strategies for Anode of Mg-Air Batteries and Hydrogen Evolution Reactions on Mg-RE Alloys – N. Shrestha, V. Utgikar, and K. S. Raja (University of Idaho)
 - 113 Core-Shell Hexacyanoferrate for Superior Na-Ion Batteries – M. Wan (Huazhong University of Science and Technology)
 - 114 Effect of 1D Diffusion Channel Size and Ionic Content on Li^+ Ion and Na^+ Ion Diffusion in Tunnel Manganese Oxides – B. Byles and E. Pomerantseva (Drexel University)
 - 115 A Permselective Graphene Oxide/ Polyvinyl Alcohol Composite Membrane for Rechargeable Alkaline Zinc Manganese Dioxide Batteries – J. Huang, G. G. Yadav, D. Turney, M. Nyce, and S. Banerjee (CUNY Energy Institute at the City College of New York)
 - 116 Electrochemical Plating/Stripping Behavior of Metallic Zn on Carbon Film Current Collector – W. Li, K. Wang, S. Cheng, and K. Jiang (Huazhong University of Science and Technology)
- | | | |
|-------|------------|--|
| 08:00 | 297 | Advanced Electrolyte and Electrode Enabling High Energy Lithium Sulfur Batteries – H. Pan (Joint Center for Energy Storage Research (JCESR), Pacific Northwest National Laboratory), Y. Shao (Pacific Northwest National Laboratory, Joint Center for Energy Storage Research (JCESR)), and J. Liu (Joint Center for Energy Storage Research (JCESR), Pacific Northwest National Laboratory) |
| 08:20 | 298 | Chemical Imaging Analysis of Solid-Electrolyte Interphase Layer in Li-S Battery – V. Murugesan, K. S. Han, V. Shutthanandan (Pacific Northwest National Laboratory), S. Thevuthasan (EMSL, Pacific Northwest National Laboratory), and K. T. Mueller (Joint Center for Energy Storage Research (JCESR)) |
| 08:40 | 299 | Interfacial Interactions of Lithium Polysulfide and Carbon Nanotubes – K. S. Han (Pacific Northwest National Laboratory), V. Murugesan (Pacific Northwest National Laboratory, Joint Center for Energy Storage Research), and K. T. Mueller (Joint Center for Energy Storage Research (JCESR)) |
| 09:00 | 300 | Exploring the Electrochemistry of Organosulfides As High Capacity Cathode for Lithium Batteries – J. Ackerson (University of Wisconsin-Eau Claire), Y. Fu (Zhengzhou University), and Y. Ma (University of Wisconsin-Eau Claire) |
| 09:20 | 301 | Polymeric Selenium Sulfides As Promising Cathode Materials for High-Energy Lithium Batteries – P. Dong (Washington State University), K. S. Han (Pacific Northwest National Laboratory), J. I. Lee, X. Zhang, Y. Cha, and M. K. Song (Washington State University) |
| 09:40 | 302 | Sion Power's <i>Licerion</i> [®] Batteries – Y. Mikhaylik, I. Kovalev (Sion Power Corporation), C. Scordilis-Kelley, L. Liao (Sion Power), M. Laramie (Sion Power Corporation), U. Schoop (Sion Power), and T. Kelley (Sion Power Corporation) |
| 10:00 | | Break |
| 10:20 | 303 | High-Performance Lithium-Sulfur Batteries Based on Layered Double Hydroxides-Carbon Nanotubes Composite Cathode and a Dual-Coated Graphene-Polypropylene- Al_2O_3 Separator – J. Y. Hwang and Y. K. Sun (Department of Energy Engineering, Hanyang University) |
| 10:40 | 304 | Tuning the Adsorption of Polysulfides(Li_2Sx) in Lithium-Sulfur Batteries with Metal-Organic Frameworks(MOFs) – H. Park (University of Michigan) and D. J. Siegel (University of Michigan, Ann Arbor) |
| 11:00 | 305 | Encapsulating Sulfur into Magnéli Phase Ti_4O_7 Nanotube Array for Lithium Sulfur Battery Cathode – H. WU, X. HU (the Hong Kong University of Science and Technology), and G. Chen (the Hong Kong Polytechnic University, The Hong Kong University of Science and Technology) |

- 11:20 306 Cathode Nanostructuring and Separator Modification for High-Performance Lithium-Sulfur Batteries – X. Yu, G. Zhou, and Y. Cui (Stanford University)
- 11:40 307 Effective Strategies for Improving the Cycle Life of Ni-Rich $\text{LiNi}_x\text{Mn}_y\text{Co}_z\text{O}_2$ Cathodes for Lithium-Ion Batteries – J. Zheng, W. Zhao, L. Zou, C. Wang, and J. Zhang (Pacific Northwest National Laboratory)

Room 608, Washington State Convention Center

Lithium-Ion Cathode 1 – 08:00 – 12:20

Co-Chairs: Jan L. Allen, Binghong Han, and Francis Amalraj Susai

- 08:00 287 The Effects of Combustion Fuels (Urea and Ethylene Glycol) on the Electrochemical Performance of LMNCA – F. P. Nkosi (University of Witwatersrand, Council of Scientific and Industrial Research, Pretoria), N. Palaniyandy, K. Raju (Council for Scientific and Industrial Research, Pretoria), C. Billing (University of Witwatersand), and K. I. Ozoemena (University of Witwatersrand)
- 08:20 288 Fast Formation Cycling for Nickel-Rich NMC/Graphite Lithium Ion Batteries – C. Mao, R. E. Ruther, and D. L. Wood III (Oak Ridge National Laboratory)
- 08:40 289 Structure and Voltage Recovery Driven by Defects Elimination in Li-Rich Layered Oxide Cathode Materials – M. Zhang (University of California San Diego), H. Liu (University of California, San Diego), and Y. S. Meng (University of California - San Diego)
- 09:00 290 Substituted LiCoPO_4 As Cathode Material for Lithium Batteries – J. L. Allen, S. A. Delp, J. Wolfenstine, and T. R. Jow (U.S. Army Research Laboratory)
- 09:20 291 Investigation of Al_2O_3 Wet-Chemical Coatings on Cathode Materials of Lithium-Ion Batteries – B. Han, B. Key (Argonne National Laboratory), S. Lapidus (Advanced Photon Source, Argonne National Laboratory), J. Garcia, H. Iddir (Argonne National Laboratory), J. T. Vaughey (JCESR at Argonne National Laboratory), and F. Dogan (Argonne National Laboratory)
- 09:40 Break
- 10:00 292 *(Invited)* Bulk and Surface Chemistry of High-Nickel Layered Oxide Cathodes – A. Manthiram (The University of Texas at Austin)
- 10:40 293 *(Invited)* A New Type of Ni-Doped LiCoO_2 with Enhanced Structural and Electrochemical Reversibility at High Voltage – W. Cho and J. Cho (Ulsan National Institute of Science and Technology)
- 11:20 294 Abnormal Self-Discharge in Lithium-Ion Batteries – K. Kang, W. M. Seong, K. Y. Park (Seoul National University), M. H. Lee (Seoul National University), H. Park (Seoul National University), K. Oh, and S. Lee (Seoul National University)
- 11:40 295 Enhanced Long-Term Cycling Performance of Single Crystalline $\text{LiCo}_{0.95}\text{Ni}_{0.05}\text{O}_2$ cathode Material at High Cut-Off Voltage in Li-Ion Cell – M. Yoon and J. Cho (Ulsan National Institute of Science and Technology)
- 12:00 296 In-Situ X-Ray Diffraction Study on Failure Mechanisms of Nickel-Rich NmcS – S. Wang, M. Yan, and J. Yang (University of Washington)

Room 609, Washington State Convention Center

Lithium-Sulfur 3 – 13:00 – 16:00

Co-Chairs: Vijayakumar Murugesan, Yue Qi, and Ying Ma

- 13:00 315 *(Invited)* Fundamental Challenges to Develop High Energy Lithium Sulfur Pouch Cells – J. Xiao (Pacific Northwest National Lab, University of Arkansas), D. Lu (Pacific Northwest National Laboratory), L. Shi (PNNL), C. Niu, and J. Liu (Pacific Northwest National Laboratory)
- 13:40 316 Operando Multi-Modal Synchrotron Investigation for Structural and Chemical Evolution of Metal Sulfide Additives in Li-S Battery – C. H. Lin (Stony Brook University), K. Sun (Brookhaven National Laboratory), C. Zhao (Stony Brook University), G. J. Williams, J. Bai, E. Dooryhee, J. Thieme, E. Stavitski, K. Attenkofer, H. Gan (Brookhaven National Laboratory), and Y. C. K. Chen-Wiegart (Stony Brook University, Brookhaven National Laboratory)
- 14:00 317 Engineering Pore Architecture into 2D Morphology: Synthesis of Multifunctional Nitrogen-Doped Porous Carbon Nanosheets Towards Long Calendar Life Lithium-Sulfur Battery – S. Feng, J. Song, D. Du, and Y. Lin (Washington State University)
- 14:20 318 Highly Efficient Multifunctional Interlayer for Lithium Sulfur Battery – P. S. Ramaprabhu, G. M. Seshadri, V. K. S. Ajay Piriya, R. Chandrabhan Shende (Indian Institute of Technology Madras), R. Dharavath, S. Biswas, S. Loganathan, T. S. Balasubramanian, and K. Rambabu (RCI)
- 14:40 Break
- 15:00 319 Role of Structural Dynamics on Lithium Diffusion in $\text{Li}_{10}\text{GeP}_2\text{S}_{12}$ (LGPS) and Li_3PS_4 (LPS) Solid Electrolytes – A. T. Hall and N. Adelstein (San Francisco State University)
- 15:20 320 Development of Sulfur Cathode Comprising of Biomass Derived Activated Carbon As Host for Improved Lithium-Sulfur Battery Performance – E. Hari Mohan (ARCI, NIT warangal), K. Nanaji, S. Anandan (ARCI), B. V. Appa Rao (NIT warangal), and T. N. Rao (ARCI)
- 15:40 321 Origin of the Two-Plateaued or One-Plateaued Open Circuit Voltage in Li/S Batteries from First Principle Calculation – Y. Lin and Y. Qi (Michigan State University)

Room 608, Washington State Convention Center

Lithium-Ion Cathode 2 – 13:00 – 16:00

Co-Chairs: Jan L. Allen, Francis Amalraj Susai, and Byron D. Gates

- 13:00 308 Deciphering the Voltage Increase Code in V_2O_5 Cathode for Li-Ion Battery – C. Liu and G. Cao (University of Washington)
- 13:20 309 Acid-Scavenging Separators: A Novel Route for Improving the Li-Ion Batteries' Durability – A. Banerjee, B. Ziv, Y. A. Shilina, S. Luski, D. Aurbach (Bar-Ilan University), and I. C. Halalay (General Motors Global R&D)

- 13:40 **310** Advanced Ni-Rich and Li,Mn-Rich Cathode Materials for Lithium-Ion Batteries – F. A. Susai, H. Sclar, R. Raman, E. Erickson, F. Schipper, M. Dixit, D. T. Mayor, J. Grinblat (Bar Ilan University), M. Talianker (Ben-Gurion University of the Negev), B. Markovsky, and D. Aurbach (Bar Ilan University)
- 14:00 **311** (Invited) Progress in Gradient Cathode Materials for High-Performance Rechargeable Lithium-Ion Batteries – Y. K. Sun (Department of Energy Engineering, Hanyang University)
- 14:40 Break
- 15:00 **312** Reversibility of Ni-Rich Layered Cathode Material Revealed By Structural, Spectroscopic and Imaging Characterizations – E. Hu, Z. Shadiké, X. WANG, H. S. Lee, and X. Q. Yang (Chemistry Division, Brookhaven National Laboratory)
- 15:20 **313** Boron-Doped Ni-Rich Layered Cathodes with Enhanced Cycling Stability – K. J. Park and Y. K. Sun (Department of Energy Engineering, Hanyang University)
- 15:40 **314** *In Operando* Depth Profiling Studies of Thick NMC Cathodes – P. Khalifah (Brookhaven National Lab, Stony Brook University), Z. Li (Chemistry Division, Brookhaven National Laboratory, Department of Chemistry, Stony Brook University), L. Yin (Department of Chemistry, Stony Brook University), G. Mattei (Chemistry Division, Brookhaven National Laboratory, Department of Chemistry, Stony Brook University), B. S. Lee, Z. Wu (University of California, San Diego), S. M. Bak, X. Q. Yang (Chemistry Division, Brookhaven National Laboratory), and P. Liu (University of California, San Diego)
- Ballroom 6ABC, Washington State Convention Center**
- A03 Monday Poster Session – 18:00 – 20:00**
Co-Chairs: John T. Vaughney and Lu Zhang
- **322** In Situ Study of the Reaction Mechanisms of Tmspi and Tmspa Additives in Lithium Ion Batteries By Online Electrochemical Mass Spectrometry – C. Bolli, A. Guéguen (Paul Scherrer Institute, Electrochemistry Laboratory), M. Mendez (BASF SE), and E. J. Berg (Paul Scherrer Institute, Electrochemistry Laboratory)
 - **323** Investigation of Degradation Pathway in High Ni-Content Cathode Materials at Primary and Secondary Particle Level By Multi-Scale Characterization – R. Lin (CFN, Brookhaven National Laboratory), S. M. Bak, H. S. Lee, X. Q. Yang (Chemistry Division, Brookhaven National Laboratory), and H. L. Xin (CFN, Brookhaven National Laboratory)
 - **324** Graphene Induced Growth of Single Crystalline Sb₂MoO₆ Sheets and the Sodium Storage Performance – Q. Liu (Huazhong University of Science and Technology)
 - **325** Microstructure Evolution in “Li-Free” Thin Film Solid-State Li-Ion Batteries – H. Yang, M. A. Citrin, X. Xia (California Institute of Technology), S. Nieh (Front Edge Technology, Inc.), and J. R. Greer (California Institute of Technology)
 - **326** Process Development for Thin Film Solid State Battery on Four Inch Wafer Using Glove Box Attached Custom Built Single Chamber PVD System – T. R. K H, S. Ramaprabhu (Indian Institute of technology, Madras), and M. R. Gowravaram (Indian Institute of Science)
 - **327** Solid-State Stretchable Fabric-Based Lithium Ion Battery – B. Moradi Ghadi (University of Houston) and H. Ardebili (Univeristy of Houston)
 - **328** Highly Durable Sulfur Impregnated Distorted Carbon Nanotubes for Sodium Ion Battery – P. S. Ramaprabhu, V. K. S. Ajay Piriya, G. M. Seshadhri, R. Chandrabhan Shende (Indian Institute of Technology Madras), R. Dharavath, S. Biswas, S. Loganathan, T. S. Balasubramanian, and K. Rambabu (RCI)
 - **329** Nanostructured Metal Chalcogenide Networks As Carbon- and Binder-Free Cathode Materials for Li, Na, and Al-Ion Batteries – C. Hawkins and L. Whittaker-Brooks (University of Utah)
 - **330** Bio-Inspired Surface Layer for the Cathode Material of High-Energy Density Sodium-Ion Batteries – C. H. Jo and S. T. Myung (Sejong University)
 - **331** Exfoliated Transition Metal Dichalcogenide Nanosheets for Sodium Ion Batteries and Supercapacitors – L. David (Oak Ridge National Laboratory), S. Mukherjee, M. Abass, and G. Singh (Kansas State University)
 - **332** A Binder-Free Snowflake Grown Microcube Prussian Blue Particles As Possible Electrode for Supercapacitor and Sodium Ion Battery Applications – K. vijaya Sankar, Y. Seo, and S. C. Jun (Yonsei University)
 - **333** Chemically Preintercalated Bilayered Vanadium Oxides As Novel Cathode Materials for High Capacity K-Ion Batteries – M. Clites and E. Pomerantseva (Drexel University)
 - **334** M-N-Doped Carbon Nanofibers Modified Separators for Lithium-Sulfur Batteries – X. Song, G. Chen, S. Wang, and H. Wang (South China University of Technology)
 - **335** Origin of High Charge Capacity of WS₂ in Lithium Ion Battery – T. T. Debela (Jeonju University)
 - **336** Applications of Carbon Nanotubes in Developing High Performance Lithium Sulfur Batteries – J. Wang (Tsinghua University, Dept. of Physics)
 - **337** Silicon Based Anodes and New Electrolytes for Next Generation Lithium-Ion Batteries and Lithium-Sulfur Batteries – A. Baasner (Technical University of Dresden), M. Piwko, S. Doerfler, H. Althues (Fraunhofer Institute for Material and Beam Technology), and S. Kaskel (Technical University of Dresden)
 - **338** Systematic Study of Efficient Adsorbents and Mediators for Advanced Lithium Sulfur Battery – F. Liu and Y. Lu (University of California, Los Angeles)
 - **339** Carbon Nanofibers (CNFs) Coated Ni Foam As 3D Integrated Current Collector and Sulfur Host in Li-S Batteries – Z. Zeng (west virginia univerity) and X. Liu (West Virginia University)

- **340** Double-Nets Enclosed Sulfur Composite As a New Cathode in Lithium Sulfur Batteries – J. Niu (University of Wisconsin-Milwaukee)
- **341** Electrocatalysis of Polysulfide Conversion By Sulfur-Deficient MoS₂ Nanoflakes for Lithium-Sulfur Batteries – H. Lin and J. Y. Lee (National University of Singapore)
- **342** Spray Coated Nanorod Structured Molybdenum Oxide (MoO₃) on Celgard for Ultra-Fast and Highly Stable Next Generation Lithium-Sulfur Battery – N. Kaiser (Department of Materials Science and Engineering, NTUST, Academia Sinica), S. A. Abbas (Department of ESS, NTHU, TW), J. Diang (Guangxi University), S. Jou (National Taiwan University of Science and Technology), and C. W. Chu (Academia Sinica)
- **343** A First-Principles Study of Amorphous Li₂S in Lithium-Sulfur Batteries – Z. Liu, H. Deng (Hunan University), and P. P. Mukherjee (Purdue University)
- **344** A New Generation of Rechargeable Aluminum Ion Battery Technology – K. L. Ng, M. Malik, and G. Azimi (University of Toronto)
- **345** Kinetic Surface Control for Improved Magnesium-Electrolyte Interfaces for Magnesium Batteries – R. Masse, G. Cao, and B. Li (University of Washington)
- **346** Comparison of the Interfacial Reaction Kinetics and Plating Morphology of Lithium and Magnesium Anodes – Y. Li (Michigan State University), Z. Liu (The Pennsylvania State University), Y. Lin (Michigan State University), Y. Yao (University of Houston), L. Q. Chen (The Pennsylvania State University), and Y. Qi (Michigan State University)
- **347** Towards Finding Cathode Materials for Aluminum Batteries: Kinetics and Thermodynamics of Al Ion Intercalation into Mxenes – A. VahidMohammadi and M. Beidaghi (Auburn University)
- **348** Enable High Initial Coulombic Efficiency for Lithium Battery Anode By Ultrathin Polymer Electrolyte Coating – S. Wang, Y. Gao, B. H. Shen, and W. Tenhaeff (University of Rochester)
- **349** Latex Based Emulsion Functional Conductive Polymer Binder for Si Composite Electrode – G. Liu and T. Zheng (Lawrence Berkeley National Laboratory)
- **350** Si Nanoparticles: Its Stability in Aqueous Slurries and the Optimization of Oxide Layer Thickness for Optimal Electrochemical Performance – L. Zhang (Argonne National Laboratory), Y. Liu (Center for Nanoscale Materials), B. Key (JCESR at Argonne National Laboratory), S. E. Trask, Z. Yang, and W. Lu (Argonne National Laboratory)
- **351** Facile and Cost Effective Directly Electrospayed Graphene/Silicon Nanocomposites for High-Rate Lithium-Ion Battery Anodes – G. Shoorideh (Cornell University), S. M. Park (Cornell University), A. Berry (Cornell University), and Y. L. Joo (Cornell University)
- **352** Characterization and Chemical Mapping of High Capacity Intermetallic Li-Ion Anodes Using X-Ray Microscopy Techniques – H. J. Gonzalez-Malabet, L. Ausderau (University of Alabama in Huntsville), D. Juarez-Robles (Purdue University), X. Xiao, V. De Andrade (Argonne National Laboratory), Y. Liu (Stanford Synchrotron Radiation Lightsource), P. P. Mukherjee (Purdue University), and G. J. Nelson (University of Alabama in Huntsville)
- **353** Strategies for Overcoming Irreversible Lithium-Ion Losses in Silicon-Based Anodes – F. B. Song and S. L. Biswal (Rice University)
- **354** A New Approach to Synthesis Micrometer-Sized Porous Silicon Anode for Lithium Ion Batteries – H. Jia, X. Li (Pacific Northwest National Laboratory), and J. G. Zhang (Joint Center for Energy Storage Research (JCESR))
- **355** Highly Stretchable Conductive Binder Based on PEDOT:PSS for High Performance Si Anode – L. Wang and H. K. Fu (Huazhong University of Science and Technology)
- **356** Rate Performance of Silicon Alloy in Blended Lithium-Ion Battery Anode with Graphite – L. Cao, C. Yang, and S. Santhanagopalan (National Renewable Energy Laboratory)
- **357** Computational Study of Surface Reactivity and Metal Dissolution in Li_xNi_{0.5}Mn_{1.5}O_{4-Δ} – K. Klyukin, N. N. Intan, and V. Alexandrov (University of Nebraska-Lincoln)
- **358** Jahn-Teller Distortion and Disproportionation in Spinel Lithium Manganese Oxides from First Principles – M. Voros, J. Garcia (Argonne National Laboratory), R. Warburton (Purdue University), H. Iddir (Argonne National Laboratory), J. Greeley (Purdue University), and L. A. Curtiss (Argonne National Laboratory)
- **359** Studying the Effects of Carbon Coatings on the Electrochemical Performance of LiNi_{1/3}Co_{1/3}Mn_{1/3}O₂ – P. Babbar (MEET Battery Research Center, University of Münster, Institute of Physical Chemistry, University of Münster), P. Niehoff, F. Schappacher (MEET Battery Research Center, University of Münster), and M. Winter (Helmholtz-Institute Münster, IEK-12 Juelich, MEET Battery Research Center, University of Münster)
- **360** Core-Shell Architected High Energy Cathode Nanocrystals to Stabilize the Electrode-Electrolyte Interface – B. J. Kwon (University of Illinois at Chicago), F. Dogan (Argonne National Lab), B. Key (JCESR at Argonne National Laboratory), J. Jokisaari (University of Illinois at Chicago), J. W. Freeland (X-ray Science Division), C. Kim (Chungnam National University), R. F. Klie (University Of Illinois At Chicago), and J. Cabana (University of Illinois at Chicago)
- **361** Synthetic Control and Structural Stabilization of Ni-Rich Layered Oxides As High-Energy Cathode Materials for Lithium Ion Batteries – J. Zhao, W. Zhu, and L. Gao (Soochow University)

- **362** Structural and Electrochemical Properties of RF Sputter Deposited LiCuPO₄ Thin Film Cathodes for Li-Ion Microbatteries – V. A. Sugiawati (Aix-Marseille University), F. Vacandio, P. Knauth (MADIREL), and T. Djenizian (Ecole Nationale Supérieure des Mines de Saint-Etienne)
- **363** Effects of Local Tortuosity and Porosity Heterogeneities on Charge and Discharge Performance of Li-Ion Batteries – M. M. Forouzan (Brigham Young University, Brigham Young University (BYU)), D. R. Wheeler, and B. A. Mazzeo (Brigham Young University)
- **364** Effects of Non-Uniform Temperature Distribution on Degradation of Lithium-Ion Cells – G. Zhang (University of Alabama in Huntsville)
- **365** Electrochemical Performance of Dry Battery Electrode – J. Shin and H. Duong (Maxwell Technologies, Inc.)
- **366** Improvement of Thermal Stability of Lithium Ion Pouch Type Cell – C. Sung, Y. Kang, H. Na, and K. M. Jeong (Ulsan National Institute of Science and Technology)
- **367** Analysis of Rate Limiting Factors for Electrodes with High Loadings for EV Batteries – B. S. Lee, Z. Wu, V. Petrova, and P. Liu (University of California, San Diego)
- **368** Mechanical Measurements for Early Detection of Thermal Runaway Induced By an Internal Short Circuit – S. Pannala (University of Michigan), M. Zhang (Tsinghua University), J. B. Siegel, G. B. Less, and A. G. Stefanopoulou (University of Michigan)
- **369** Modeling Cascading Failure of Thermal Runaway in Stacks of Li-Ion Pouch Cells with Variation in Cooling Attributes – R. C. Shurtz and J. Hewson (Sandia National Laboratories)
- **370** Sulfurized-Polyacrylonitrile Cathode with Polyacrylic Acid Binder and Fluoroethylene Carbonate Additive for Improved Performances of Lithium-Sulfur Batteries – H. M. Kim (Department of Energy Engineering, Hanyang University), D. Aurbach (Bar Ilan University), and Y. K. Sun (Department of Energy Engineering, Hanyang University)

A04 Materials Recycling for Energy Conversion and Storage

Battery / Energy Technology / Industrial Electrochemistry and Electrochemical Engineering
Room 619, Washington State Convention Center

Recycling and Lithium-Ion Batteries – 10:00 – 11:40

Co-Chair: Jeffrey Spangenberg

- 10:00 **605** Lithium-Ion Battery Recycling Process Comparison – L. Gaines, J. Spangenberg, and Q. Dai (Argonne National Laboratory)
- 10:20 **606** A Cost-Effective Lithium-Ion Battery Direct Recycling Process – Z. Li (Virginia Tech)
- 10:40 **607** Advances in Direct Recycling of Lithium-Ion Electrode Materials – S. E. Sloop (OnTo Technology LLC), J. E. Trevey (Forge Nano), and L. Gaines (Argonne National Laboratory)
- 11:00 **608** A Tale of Two Fridges: Temperature Implications on Long Term Fading, Material Degradation, and Performance Recovery in Lithium-Ion Batteries – C. Bommier, A. Kim (Princeton University), and D. A. Steingart (MAE/ACEE Princeton University)

- 11:20 **609** Electrochemical Preparation of Nanostructured Silicon from Rice Husks As a Sustainable Source for High Performance Anode in Secondary Lithium Ion Battery – D. C. Wu, S. C. Wu (Department of MSE, NTHU, Hsinchu, Taiwan), Y. Ai (Institute of FFS, UESTC, Chengdu, China), and Y. L. Chueh (Department of MSE, NTHU, Hsinchu, Taiwan)

Hydrometallurgical Recycling of Li-Ion Batteries – 14:00 – 16:00

Co-Chair: Christopher Johnson

- 14:00 **610** A Closed Loop Process for the End-of-Life Electric Vehicle Li-Ion Batteries – Y. Wang (Worcester Polytechnic Institute)
- 14:20 **611** Recycling Lithium Batteries Using Membrane Technologies – L. Lien (Membrane Development Specialists)
- 14:40 **612** Fundamental and Applied Aspects to Recycle NMC Cathode Material in Acidic Solution – E. Billy, M. Joulie, A. Boulineau, R. Laucournet (CEA-LITEN), E. De Vito (CEA - LITEN), and D. Meyer Sr. (CEA - ICSM)
- 15:00 **613** Extracting Lithium and Metals from Spent Batteries – R. Govind (PRD Tech, Inc.)
- 15:20 **614** Recycling of Spent Lithium Ion Batteries Using Sulfuric Acid with Detailed Mass Balance – S. Anwani, R. N. Methekar (Visvesvaraya National Institute of Technology), and V. Ramadesigan (Indian Institute of Technology, Bombay)
- 15:40 Break

Recycling of All Battery Types – 16:00 – 17:40

Co-Chair: Linda Gaines

- 16:00 **615** Analyzing the Legal and Economic Cost Barriers to the Recycling of Advanced Battery Chemistries – J. H. R. E. Howes (Redland Energy Group)
- 16:20 **616** Recell; A Closed-Loop Battery Recycling Model – J. Spangenberg, L. Gaines, and Q. Dai (Argonne National Laboratory)
- 16:40 **617** Recycling of Rare Earth Elements from Nickel Metal Hydride Battery Utilizing Supercritical Fluid Extraction – Y. Yao, N. F. Farac, and G. Azimi (University of Toronto)
- 17:00 **618** Electrolytic Recycling of Primary Alkaline Batteries – W. E. Mustain (University of South Carolina), H. Soucie, C. Nguyen, P. Petracca, H. Nguon (University of Connecticut), F. Zhang, and A. Wangstrom (Duracell)
- 17:20 Concluding Remarks

B01 Carbon Nanostructures for Energy Conversion and Storage

Nanocarbons / Physical and Analytical Electrochemistry
Room 201, Washington State Convention Center

Energy Harvesting – 08:00 – 12:00

Co-Chairs: Jeffrey L. Blackburn and Andrew John Ferguson

- 08:00 **641** (Invited) Individualized Low-Dimensional Carbon Allotropes: Enabling Ground State and Excited State Charge Transfer By NIR Absorbing Heptamethine Cyanine – D. M. Guldi (Universität Erlangen-Nürnberg)
- 08:20 **642** Carbon Nanotubes for Flexible Perovskite Solar Cells – S. Maruyama (The University of Tokyo, Advanced Industrial Science and Technology)

- 08:40 **643** Carbon Nanotubes - the p-Type Contact of the Future for Perovskite Solar Cells? – S. N. Habisreutinger (National Renewable Energy Laboratory, University of Oxford), N. K. Noel (Princeton University, University of Oxford), H. J. Snaith, and R. J. Nicholas (University of Oxford)
- 09:00 **644** *(Invited)* Genesis, Status, and Future of the Carbon Nanotube Optical Rectenna – B. Cola (Georgia Institute of Technology)
- 09:20 **645** High Performance Optical Rectenna Arrays Using Multiwall Carbon Nanotube–Insulator–Metal Tunneling Diodes – E. C. Anderson, T. L. Bougher, and B. Cola (Georgia Institute of Technology)
- 09:40 Break
- 10:00 **646** *(Invited)* Improved Charge and Exciton Transport in Polymer-Removed SWCNT Thin Films: Implications for Photovoltaic and Thermoelectric Energy Harvesting – A. J. Ferguson, J. L. Blackburn, S. Hart, H. S. Kang, R. Ihly, B. A. MacLeod, and N. H. Stanton (National Renewable Energy Laboratory)
- 10:20 **647** *(Invited)* Large Low Temperature Thermoelectric Power Factor from Completely Organic Thin Films Enabled By Carbon Nanostructures – J. Grunlan (Texas A&M University)
- 10:40 **648** *(Invited)* From Thermopower Waves to Asymmetric Chemical Doping – New Concepts in Energy Storage and Generation Using Molecular Interactions with Single-Walled Carbon Nanotubes – A. T. Liu, M. S. Strano, Y. Kunai, P. Liu, and A. Cottrill (MIT)
- 11:00 **649** Tuning the Thermoelectric Properties of Carbon Nanotube Films By Molecular Doping – Y. Nonoguchi (Nara Institute of Science and Technology, JST PRESTO)
- 11:20 **650** *(Invited)* Air-Stability Mechanism of n-Type Single-Walled carbon Nanotube Sheet Doped with Benzimidazole Derivative – T. Fujigaya (PRESTO-JST), A. Staykov (WPI-I2CNER, Kyushu University), W. Huang (Kyushu University), and Y. Nakashima (Kyushu University, Japan)
- 11:40 **651** *(Invited)* Harvesting Torsional and Tensile Mechanical Energy as Electrical Energy Using Nanofiber Yarns – R. H. Baughman (Alan G. MacDiarmid NanoTech Institute, UTD)
- 09:00 **673** Xeno Nucleic Acids for Enhancing the Optical Stability of Nanosensors – A. J. Gillen (École Polytechnique Fédérale de Lausanne), C. Gigli (Université Denis Diderot), and A. A. Boghossian (École Polytechnique Fédérale de Lausanne)
- 09:20 **674** Carbon Nanotube-Based Sensors for Early Cancer Detection – D. A. Heller (Weill Cornell Medicine, Cornell University), J. Budhathoki-Uprety (Memorial Sloan Kettering Cancer Center), T. V. Galassi (Weill Cornell Medicine, Cornell University), R. Frederiksen, J. Harvey (Memorial Sloan Kettering Cancer Center), C. P. Horoszkow (cornell), P. V. Jena (Memorial Sloan Kettering Cancer Center), R. E. Langenbacher (Weill Cornell Medical College, Cornell University), D. Roxbury, J. Shah, R. M. Williams, and H. Baker (Memorial Sloan Kettering Cancer Center)
- 09:40 Break

Carbon Nanotube Biosensors and Imaging Probes 2 – 10:00 – 12:00
Co-Chairs: Nicole M. Iverson and Flavia Vitale

- 10:00 **675** *(Invited)* Nanoscale Imaging of Brain Tissue Features with Carbon Nanotubes – L. Cognet (Institut d'Optique & CNRS, Univ. Bordeaux)
- 10:20 **676** *(Invited)* Imaging Dopamine Neuromodulation with Single Wall Carbon Nanotube Sensors – A. G. Beyene (University of California Berkeley), K. Delevich, J. T. Del Bonis-O'Donnell, W. C. Lin, W. Thomas, L. Wilbrecht (University of California, Berkeley), and M. P. Landry (University of California Berkeley)
- 10:40 **677** Optical Properties of Dyes Confined into Carbon and Boron Nitride Nanotubes for Multimodal Bio-Imaging – E. Gaufres (CNRS), C. Allard, R. O. Nascimento (Université de Montréal), F. Fossard (CNRS-ONERA), E. Flahaut (Université Fédérale de Toulouse-Midi-Pyrénées), A. Loiseau (CNRS-Onera), and R. Martel (Regroupement Québécois sur les Matériaux de Pointe)
- 11:00 **678** *(Invited)* Near Infrared Chemical Imaging of Cellular Communication Using Carbon Nanotubes – D. Meyer, F. Mann, E. Polo, A. Hagemann, N. Herrmann, and S. Kruss (Göttingen University)
- 11:20 **679** *(Invited)* Probing the Intracellular Fate of Carbon Nanotube-Based Near-Infrared Sensors – M. Safaei, M. Gravely, D. Restrepo, and D. Roxbury (University of Rhode Island)
- 11:40 **680** Characterization of Double-Stranded DNA (dsDNA) on Single-Walled Carbon Nanotubes (SWCNTs) – S. J. Wu, N. Schuergers, A. J. Gillen, and A. A. Boghossian (École Polytechnique Fédérale de Lausanne)

Carbon Nanotube Biosensors, Probes, and Therapies – 14:20 – 16:40
Co-Chairs: Ardemis Anoush Boghossian and Daniel Roxbury

- 14:20 **681** *(Invited)* Nanocarbons for Multimodal Imaging, and Combination Multidrug/Gene Delivery – A. V. Naumov, M. T. Hasan, E. Sizemore, R. Gonzalez-Rodriguez, and G. Akkaraju (Texas Christian University)
- 14:40 **682** *(Invited)* Utilization of Single Wall Carbon Nanotube Sensors for Detection of Disease Development – N. M. Iverson, J. A. Stapleton, E. M. Hofferber, and J. J. Adams (University of Nebraska Lincoln)

B02 Carbon Nanostructures in Medicine and Biology
 Nanocarbons / Organic and Biological Electrochemistry / Sensor
 Room 203, Washington State Convention Center

Carbon Nanotube Biosensors and Imaging Probes 1 – 08:00 – 10:00
Co-Chairs: Delphine Bouilly and Fotios Papadimitrakopoulos

- 08:00 **670** *(Invited)* New Aqueous Two-Phase Systems for Sorting DNA-Wrapped SWCNTs – M. Lyu, J. Yang, Y. Li (Peking University), and M. Zheng (National Institute of Standards and Technology)
- 08:20 **671** *(Invited)* New Concepts in Biosensing Using Single Walled Carbon Nanotubes and Graphene – M. S. Strano (MIT)
- 08:40 **672** *(Invited)* Length-Dependent Intracellular Bundling of Single-Wall Carbon Nanotubes Influences Retention – M. F. Islam (Carnegie Mellon University)

- 15:00 **683** *(Invited)* High Aspect Ratio Nanomaterials Enable Biomolecule Delivery and Transgene Expression or Silencing in Mature Plants – G. Demirel, R. Chang, H. Zhang, L. Chio (University of California Berkeley), and M. P. Landry (University of California Berkeley, Chan-Zuckerberg Biohub)
- 15:20 **684** *(Invited)* Nanoelectronic Lab-on-a-Chip DNA Sensors Based on Nanocarbon Materials – D. Bouilly (IRIC, Université de Montréal)
- 15:40 **685** Helical Polycarbodiimide-Cloaked Carbon Nanotubes for Biomedical Applications – J. Budhathoki-Uprety (Memorial Sloan Kettering Cancer Center), J. A. Korse (Memorial Sloan Kettering Cancer Center, Weill Cornell Medical College), R. E. Langenbacher (Weill Cornell Medical College, Cornell University), A. E. Wayne (Washington University in St. Louis), P. V. Jena (Memorial Sloan Kettering Cancer Center), and D. A. Heller (Weill Cornell Medicine, Cornell University)
- 16:00 **686** Carbon Nanotubes as Nanovectors for Intracellular Delivery – T. DaRos (Trieste University)
- 16:20 **687** Elucidating Protein Corona Formation on Nanocarbons in Complex Biological Fluids – R. L. Pinals (University of California, Berkeley) and M. P. Landry (University of California Berkeley)
- 10:20 **760** *(Invited)* Nanopore Batteries: Fast and Slow Ion Transport in 1D and 3D Networked Porous Nanostructure Electrodes – S. B. Lee (Department of Chemistry and Biochemistry, University of Maryland)
- 10:40 **761** *(Invited)* Design and Synthesis of Hybrid Nanomaterials for Electrochemical Energy Storage Applications – M. K. Song (Washington State University)
- 11:00 **762** *(Invited)* Two-Dimensional Organic Network Structures for Energy Conversion and Storage – J. Mahmood and J. B. Baek (UNIST)
- 11:20 **763** *(Invited)* Development of Nanostructured Mesoporous Carbon As a Support and Catalyst for Fuel Cell Application – C. Pak, B. H. Lee, J. Y. Lee, S. W. Lee, D. H. Kim (GET, SIT, IIT, Gwangju Institute of Science and Technology), D. J. You, and J. M. Kim (Department of Chemistry, Sungkyunkwan University)
- 11:40 **764** High-Performance Flexible Bio-Electronics for Electrophysiological Recordings – J. Y. Jeon, B. C. Kang, and T. J. Ha (Kwangwoon University)
- 12:00 **765** *(Invited)* High Field THz Spectroscopy of Monolayer Graphene: Effect of Grain Size and Doping – S. C. Lim (Sungkyunkwan University)

Carbon Based Nanomaterials – 14:20 – 16:20

Co-Chairs: Nazario Martin and Seung Soon Jang

- 14:20 **766** *(Invited)* Synthetic Chiral Carbon Nanoforms – N. Martin (Universidad Complutense)
- 14:40 **767** *(Invited)* Transport of Ions Along the Exterior of Single-Walled Carbon Nanotubes – Y. T. Kim and C. Y. Lee (Ulsan National Institute of Science and Technology)
- 15:00 **768** *(Invited)* Functionalization and Application of Carbon Nanostructures – A. Istif, A. Gajewska, M. Carini, V. Armuzza, J. M. Gonzalez Dominguez, C. Hadad, and T. DaRos (Trieste University)
- 15:20 **769** *(Invited)* Graphene Oxide Liquid Crystals and Relevant Functional Nanostructures – S. O. Kim (KAIST)
- 15:40 **770** *(Invited)* First-Principles Investigation of Single Layer of Pt on Graphene – J. I. Choi, F. M. Alamgir, and S. S. Jang (Georgia Institute of Technology)
- 16:00 **771** Covalently Fabricated Graphene Interface for Electrochemical Detection of Resorcinol an Endocrine Disruptor in Solubilized Ionic Liquid System – J. A. Rather (Sultan Qaboos University, Oman), Z. Alsubhi, I. Khan (sultan qaboos University), E. Khudaish (SQU), and P. Kannan (Singapore Center Environmental Life Science Engineering)

B04

International Symposium on Nanomaterials: Focus - Korea

Nanocarbons / Dielectric Science and Technology / Electronics and Photonics / Industrial Electrochemistry and Electrochemical Engineering / Korean Electrochemical Society
Room 205, Washington State Convention Center

Electrochemical and Solar Energy Conversion – 08:00 – 10:00

Co-Chairs: Joonkyung Jang and Doo-Hyun Ko

- 08:00 **754** DFT Study on the Adsorption of Organic and Organometallic Sensitizers on Nanocrystalline TiO₂ for DSSC Applications – R. K. Chitumalla Sr. (Pusan National University) and J. Jang (Pusan National University)
- 08:20 **755** *(Invited)* How Can We Improve C₂-Products Selectivity in the Electrochemical CO₂ Reduction? – M. H. Lee (Dept. of Applied Chemistry, Kyung Hee University)
- 08:40 **756** *(Invited)* Multi-Functional Nano-Templates for Solar Spectrum Conversion – D. H. Ko (Kyung Hee University)
- 09:00 **757** *(Invited)* First-Principles Simulation Study on the Nanomaterials for Battery and Solar Cell Applications – A. Sannyal, R. Chitumall, and J. Jang (Pusan National University)
- 09:20 **758** *(Invited)* Edge-Selectively Functionalized Graphene Nanoplatelets As a Metal-Free Counter Electrode in DSSCs – M. J. Ju (UNIST), J. C. Kim, K. Yoo (Dongguk University), J. B. Baek (UNIST), and J. J. Lee (Dongguk University)
- 09:40 Break

Application of Nanostructured Materials – 10:00 – 12:20

Co-Chairs: Sang Bok Lee and Seong Chu Lim

- 10:00 **759** Facile Synthesis of Iron OXIDE/Carbon Shell for High Performance Lithium-ION Battery ANODE – Y. Yan, Y. Kang (Sungkyunkwan University), H. S. Park (Sungkyunkwan University), and H. J. Lee (Sungkyunkwan University)

B06**2D Layered Materials from Fundamental Science to Applications**Nanocarbons / Dielectric Science and Technology / Electronics and Photonics / Industrial Electrochemistry and Electrochemical Engineering
Room 201, Washington State Convention Center**Nanocarbons Division SES Young Investigator Award Address – 14:00 – 14:20****Co-Chair: Slava V. Rotkin**

14:00 **829** (Nanocarbons Division SES Young Investigator Award Address) Bottom-up Synthesis of Semiconducting Graphene Nanoribbons via CVD – M. S. Arnold (University of Wisconsin-Madison)

Electrochemistry and Energy – 14:20 – 16:40**Co-Chairs: Michael S. Arnold and Elisa M. Miller**

14:20 **830** Probing Electrochemical Structure-Property Relationships at Non-Porous Monolayer Electrodes of Exfoliated Graphene and MoS₂ Single Layers – W. R. Walker, L. Xu, O. A. Krysiak, and M. A. Pope (University of Waterloo)

14:40 **831** Hybrid Li-Ion Electrochemical Capacitor Enabled By Highly Crumpled Nitrogen-Doped Graphene – A. S. AlZahrani (The Pennsylvania State University), R. Yi (Pacific Northwest National Laboratory), J. Song (Xi'an Jiaotong University), and D. Wang (The Pennsylvania State University)

15:00 **832** Understanding the Effects of Lateral Dimensions on the Electrochemical Performance of 2D Mxenes – E. Kayali and M. Beidaghi (Auburn University)

15:20 **833** Layered Tin Chalcogenide Electrochemistry: Fundamentals and Implications on Energy-Related Applications – X. Chia (Nanyang Technological University), P. Lazar (Palacký University Olomouc), Z. Sofer, J. Luxa (Institute of Chemical Technology Prague), and M. Pumera (Nanyang Technological University)

15:40 **834** Self-Assembly of Flexible Free-Standing Three-Dimensional Porous MoS₂-Reduced Graphene Oxide Film for High-Performance Lithium-Ion Batteries – Y. Chao (Intelligent Polymer Research Institute), R. Jalili, Y. Ge, C. Wang (University of Wollongong), T. Zheng (Intelligent Polymer Research Institute), and G. Wallace (University of Wollongong)

16:00 **835** Electrophoretic Deposition of Nitrogen-Boron Co-Doped Graphene for High Performance Supercapacitors – A. Kumar, N. Kumar, P. Singh, J. Leu (National Chiao Tung University, Taiwan), and T. Y. Tseng (National Chiao Tung University)

16:20 **836** Synthesis of WS₂xSe_{2(1-x)} Nanowalls through a Rapid Thermal Annealing Process for Hydrogen Evolution Reaction and Sensor Application – S. Y. Tang, H. Medina, W. C. Yen, Y. Z. Chen, Y. C. Wang, T. Y. Su, C. W. Chen, and Y. L. Chueh (Department of MSE, NTHU, Hsinchu, Taiwan)

B08**Porphyrins, Phthalocyanines, and Supramolecular Assemblies**Nanocarbons / Organic and Biological Electrochemistry
Room 204, Washington State Convention Center**Optoelectronic Applications – 08:00 – 12:20****Co-Chairs: Tomas Torres and Victor V. Nemykin**

08:00 **981** Porphyrin Sensitizers Exceeding a World Champion Porphyrin Dye for Dye-Sensitized Solar Cells and Their Tandem Solar Cells – H. K. Kim and S. H. Kang (Korea University)

08:20 **982** Subphthalocyanines Axially Substituted with Electroactive Moities – T. Torres (Autonoma University of Madrid, IMDEA Nanociencia, 28049 Madrid, Spain), D. M. Guldi (Universität Erlangen-Nürnberg), G. Bottari (Universidad Autónoma de Madrid and IMDEA Nanociencia), K. A. Winterfeld (University Erlangen-Nürnberg), G. Lavarda (Autonoma University of Madrid), M. Sekita (University Erlangen-Nürnberg), H. Lissau (University of Copenhagen), J. Labela, and J. Guilleme (Autonoma University of Madrid)

08:40 **983** Nitrogen-Doped Graphene Based Nanostructures for Energy & Catalytic Applications – S. O. Kim (KAIST)

09:00 **984** Synthesis and Properties of Zn Tetraphenylporphyrin Model Compounds for Solar Energy Conversion – E. Galoppini (Rutgers University - Newark)

09:20 **985** The Electrical Properties of Porphyrin Single Molecule Wires – R. J. Nichols, E. Leary (The University of Liverpool), C. Roche, H. W. Jiang (The University of Oxford), I. Grace (The University of Lancaster), T. González (Instituto Madrileño de Estudios Avanzados (IMDEA)), G. Rubio-Bollinger (Universidad Autónoma de Madrid), Y. Xiong (The University of Oxford), Q. Al-Galiby (The University of Lancaster), M. Lebedeva (The University of Oxford), K. Porfyrakis (University of Oxford), N. Agraït (Universidad Autónoma de Madrid), A. Hodgson, S. J. Higgins (The University of Liverpool), C. J. Lambert (Lancaster University), and H. Anderson (The University of Oxford)

09:40 Break

10:00 **986** Substituents Effect in Magnesium Tetraethynylporphyrin for Bulk Heterojunction Organic Solar Cells – Y. Matsuo (The University of Tokyo)

10:20 **987** Estructural Design of Funcionalized Porphyrins for Very Efficient (> 9%) BHJ Solar Cells – F. Langa (Universidad de Castilla-La Mancha)

10:40 **988** Syntheses and Optoelectronic Applications of Porphyrins and Porphyrinoids – Y. Xie (East China University of Science and Technology), Q. Li, P. Wei, and Y. Wang (East China University of Science & Technology)

11:00 **989** Tuning Optoelectronic Properties of Ionic Porphyrin Semiconductors – U. Mazur and K. W. Hipps (Washington State University)

- 11:20 990 Correlating Redox and Photophysical Properties of Donor-Acceptor (aza)BODIPY-Based Dyads and Triads with Their Electronic Structures Toward a Rational Design of New Light-Harvesting Material – V. V. Nemykin (University of Manitoba), Y. V. Zatsikha (University of Manitoba), Y. P. Kovtun (Institute of Organic Chemistry), and D. A. Blank (University of Minnesota)
- 11:40 991 Electrochemical Advances in Fluorinated/Chlorinated Boron Subphthalocyanines (BsubPcs) and Tetrabenzotriazacorroles (TBCS) Enabled By the Exploration of Their Base Chemistry and Their Application in Organic Voltaics – T. P. Bender (Department of Chemical Engineering and Applied Chemistry)
- 12:00 992 Photofunctions of Phthalocyanine Complexes – K. Ishii (Institute of Industrial Science, The University of Tokyo)
- Porphyrinoid Applications – 14:20 – 16:40**
Co-Chairs: Roberto Paolesse and Roberto Purrello
- 14:20 993 In-Vivo and In-Vitro Metabolomics with Porphyrins Based Sensor Arrays – R. Capuano, R. Paolesse, and C. Di Natale (University of Rome Tor Vergata)
- 14:40 994 Profiling Proteasome Activity By Porphyrins – R. Purrello (University of Catania)
- 15:00 995 Design of Bodipy-Based Triplet Photosensitizers and Applications in Triplet-Triplet Annihilation Upconversions – J. Zhao (Dalian University of Technology)
- 15:20 996 Universality of Ethane-Bridged Bis-Porphyrin Structural Motif for Chirality and Molecular Sensing – V. Borovkov (Tallinn University of Technology, South-Central University for Nationalities)
- 15:40 997 Novel Corroles for Chemical Sensor Applications – R. Paolesse, S. Nardis, F. Mandoj, M. Stefanelli, and C. Di Natale (University of Rome Tor Vergata)
- 16:00 998 Ion-Pairing Assemblies and Materials Comprising Charged Porphyrins – H. Maeda (Ritsumeikan University)
- 16:20 999 Surface Chemistry of Porphyrins – O. Lytken (Universität Erlangen-Nürnberg)
- 08:55 1042 Understanding the In Vivo Reactivity of Metal-on-Metal Implants – M. A. Koronfel, A. E. Goode (Imperial College London), J. N. Weker (SLAC National Accelerator Laboratory, USA), S. E. R. Tay, C. Stitt (Imperial College London), T. Simões (University of Leeds), F. Mosselmans (Diamond Light Source), P. Quinn (Diamond Light Source Ltd.), R. Brydson (University of Leeds), A. Hart (University College London), M. F. Toney (SLAC National Accelerator Laboratory), A. E. Porter, and M. P. Ryan (Imperial College London)
- 09:15 1043 Electrochemical Corrosion Behavior of Ti-6Al-4V Alloy Using Akermanite As a Bioceramic Coating – A. Rabiei Baboukani (Florida International University), A. Saatchi (University of Wisconsin-Madison), and C. Wang (Florida International University)
- 09:35 Break
- 10:00 1044 Influence of Immersion Conditions on Biocorrosion of Mg Alloys – S. Virtanen (FAU, Institute of Surface Science and Corrosion)
- 10:20 1045 Probing Local Corrosion Performance of Sol-Gel/MAO Composite Coating on Mg Alloy Using Svet and Leis – Y. Gu (Beijing Institute of Petrochemical Technology, Columbia University in the New York city) and X. Zheng (Beijing Institute of Petrochemical Technology)
- 10:40 1046 Effect of Light Illumination on the Corrosion Behavior of Mg-RE Alloy EV31A in Chloride-Alkaline Solutions – J. Ninlachart (Royal Thai Naval Academy) and K. S. Raja (University of Idaho)
- 11:00 1047 Enhanced Corrosion Mitigation of TiO₂ coated Stainless Steels Under UV Illumination – K. Sathasivam (Academia sinica, Taiwan.), T. K. Yeh, and M. Y. Wang (National Tsing Hua University)
- 11:20 1048 Microbial Corrosion Assessment of Ag-Doped Hybrid Coatings in a Microbial Fuel Cells System – L. Iannucci, S. Grassini, E. Angelini, M. Parvis (Politecnico di Torino), and P. Cristiani (CNR Institute of Biomolecular Chemistry, Ricerca sul Sistema Energetico - RSE SpA)
- 11:40 1049 Electrochemical Behavior of CrN/Cr Bilayer Coating on 316L Stainless Steel in Simulated Cathodic Environment of HT-PEFC – R. Li, Y. Cai, K. Wippermann (IEK-3, Forschungszentrum Jülich GmbH), and W. Lehnert (IEK-3, Forschungszentrum Jülich GmbH, RWTH Aachen University, Germany)

C01**Corrosion General Session**

Corrosion

Room 304, Washington State Convention Center

Corrosion in Various Environments 1 – 08:30 – 12:00**Co-Chairs: Sannakaisa Virtanen and Benjamin Paul Wilson**

- 08:30 Welcoming Remarks
- 08:35 1041 Environmentally Friendly Coatings for Improved Stainless Steel Corrosion Resistance from Biorefinery Side Streams – A. Dastpak, K. Yliniemi (Aalto University), M. Monteiro, S. Höhn (Friedrich-Alexander-Universität Erlangen-Nürnberg), M. Lundström (Aalto University), S. Virtanen (Friedrich-Alexander-Universität Erlangen-Nürnberg), and B. P. Wilson (Aalto University)

Corrosion in Various Environments 2 – 14:00 – 16:00**Co-Chairs: Masayuki Itagaki and Dev Chidambaram**

- 14:00 1050 Depassivation of Steel Rebar in Concrete Investigated By Electrochemical Impedance – M. Itagaki, T. Okamoto, S. Watanabe, H. Tokieda, Y. Hoshi, I. Shitanda, and Y. Kato (Tokyo University of Science)
- 14:20 1051 Merging Electrochemistry and Water Capillary Condensation to Understand the Corrosion Mechanism of Steel in Carbonated Concrete – M. Stefanoni, U. Angst (ETH Zurich), and B. Elsener (ETH Zurich, University of Cagliari)

14:40	1052	Study of Corrosion Rate of Buried Steel in Soil By Electrochemical Impedance Spectroscopy – S. Mineta, S. Ohki, M. Mizunuma, Y. Higashi, and S. Oka (NTT Device Technology Labs, NTT Corporation)
15:00	1053	Long-Term Behavior of Carbon Steel in Alkaline Nitrate Solutions Related to Radioactive Waste Storage – K. Evans, B. Rollins, S. Chawla, J. Beavers, and N. Sridhar (DNV GL)
15:20	1054	Dissolution Behaviors of Dual Phase Steel during Pickling – Y. Si (United States Steel)
15:40	1055	Effect of Magnetic Field on Anodic Dissolution and Pitting of Iron in a Molybdenum Nitrate Solution with Chlorides – H. Li (School of Mater. Sci. and Eng., Shanghai University), S. Ling, J. Ma, Q. Xiong (Shanghai University, School of Mater. Sci. & Eng.), and Z. Lu (School of Mater. Sci. and Eng., Shanghai University)

C02 High Temperature Corrosion and Materials Chemistry 13

High Temperature Materials / Corrosion
Room 305, Washington State Convention Center

Corrosion Mechanisms 1 – 09:15 – 12:00

Co-Chairs: Paul Gannon and Jan Froitzheim

09:15		Welcoming Remarks
09:20	1104	<i>(Invited)</i> High Temperature Corrosion of Chromia-Forming Alloys By CO ₂ : Effects of H ₂ O and SO ₂ – Y. Xie (University of New South Wales), C. Yu, T. D. Nguyen (The University of New South Wales), J. Zhang, and D. J. Young (University of New South Wales)
10:00	1105	Alloy Corrosion in Direct-Fired CO ₂ Power Cycle Environments – R. P. Oleksak (National Energy Technology Laboratory, AECOM), J. H. Tylczak, G. R. Holcomb, and Ö. N. Doğan (National Energy Technology Laboratory)
10:20	1106	The Effect of Nickel Alloy Chromium Content in Indirect-Fired CO ₂ Power Cycle Environments – G. R. Holcomb (National Energy Technology Laboratory), R. P. Oleksak, C. S. Carney (National Energy Technology Laboratory, AECOM), J. H. Tylczak, and Ö. N. Doğan (National Energy Technology Laboratory)
10:40	1107	Mesoscale Modeling of Inelastic Deformation and Stress in High Temperature Oxidation of Metals – T. L. Cheng (U.S. Department of Energy - NETL, AECOM), Y. H. Wen, and J. A. Hawk (U.S. Department of Energy - NETL)
11:00	1108	Utilizing the FeCrAl Alloys Oxidation Properties in Water, Air, and Steam – R. B. Rebak and V. K. Gupta (General Electric Global Research Center)
11:20	1109	Oxide Stability in High-Temperature High-Velocity Steam – E. Opila (University of Virginia)
11:40	1110	Corrosion Mechanisms of a Turbine Blade from Shipboard Engine Service – K. J. Meisner and E. J. Opila (University of Virginia)

Corrosion Mechanisms 2 – 13:40 – 14:40

Co-Chairs: Torsten Markus and Gregory S. Jackson

13:40	1111	Influence of Ni and Cu on Oxide-Scale Structure of Steel – A. Harashima and Y. Kondo (Nippon Steel & Sumitomo Metal Corporation)
14:00	1112	Thermal Oxidation-Induced Self-Healing on Yttrium Silicate Composites Dispersed with Silicon Carbides – M. Nanko (Nagaoka University of Technology) and H. Dinh Vu (Nagaoka University of Technology)
14:20	1113	Pt-Rh Alloy Corrosion By Phosphorous Diffusion – A. Nakano, J. Nakano (National Energy Technology Laboratory - AECOM), J. P. Bennett (National Energy Technology Laboratory - USDOE), and J. Morral (Ohio State University)

Corrosion in Energy Conversion Systems 1 – 14:40 – 16:00

Co-Chairs: Torsten Markus and Gregory S. Jackson

14:40	1114	<i>(Invited)</i> Corrosion in Concentrating Solar Power Applications – J. C. Vidal (National Renewable Energy Laboratory, Colorado School of Mines)
15:20	1115	Testing and Evaluating of Structural Materials for CSP Applications – M. Sarvghad, G. Will, and T. A. Steinberg (Queensland University of Technology (QUT))
15:40	1116	Understanding Corrosion of Ni-Cr Alloys in Molten Chloride Salts – S. S. Raiman, J. McMurray, R. Mayes, C. Abney, J. Keiser, and B. Pint (Oak Ridge National Laboratory)

Ballroom 6ABC, Washington State Convention Center

C02 Poster Session – 18:00 – 20:00

- **1117** Oxidation Characteristics of Nano-Oxide Dispersed Ferritic Stainless Steel Alloys for Solid Oxide Fuel Cell Interconnects – M. T. Mehran, R. H. Song, T. H. Lim, S. B. Lee, and J. E. Hong (Korea Institute of Energy Research (KIER))

D01

Nanoscale Luminescent Materials 5

Dielectric Science and Technology / Luminescence and Display Materials

Room 308, Washington State Convention Center

Perovskites – 08:15 – 10:00

Co-Chairs: Peter Mascher and David J. Lockwood

08:15		Welcoming Remarks
08:20	1143	<i>(Invited)</i> Optical Properties of All-Inorganic Perovskite Nanocrystals – T. Gregorkiewicz (University of Amsterdam)
09:00	1144	High Stable Perovskite-Quantum-Dot Using Ligand Engineering for Liquid-Crystals-Display Applications – J. E. Lee (Hanyang University), S. J. Lee (Hanyang University), Y. H. Ko (Hanyang University), P. Prem, K. S. Lee (Hannam University), and J. G. Park (Hanyang University)
09:20	1145	Color Pure Green and Blue Electroluminescence Using Colloidal Quantum Confined Perovskites – J. Jagielski, S. Kumar, and C. J. Shih (Institute for Chemical and Bioengineering, ETH Zürich)
09:40		Break

Optical Characterization – 10:00 – 12:20**Co-Chairs: Leandro R. Tessler and Vivian E. Ferry**

- 10:00 **1146** *(Invited)* Photo- and Cathodo-Luminescence of InAs_xP_(1-x)/InP Quantum Well Structures Under the Effects of Low-Energy Ion Bombardment – J. P. Landesman (University Rennes-1 and CNRS, France, Engineering Physics Dept, McMaster University, Canada), C. Levailois (UMR FOTON, CNRS, INSA-Rennes, France), J. Jiménez, A. Torres (GdS-Optronlab, Universtiy of Valladolid, Spain), and M. Mokhtari (University Rennes-1 and CNRS, France)
- 10:40 **1147** *(Invited)* Light on EuO_x Nanostrutured Films – A. Mariscal and R. Serna (Instituto de Optica, CSIC)
- 11:20 **1148** *(Invited)* In Situ Accurate Analysis of Colloidal Nanoparticles via Four Wave Mixing – R. Gordon (University of Victoria)
- 12:00 **1149** “White” Photoluminescence of Carbon Nanoclusters Dispersed in Fumed Silica – A. V. Vasin (NTUU “Igor Sikorsky KPI”), D. V. Kysil (Lahkaryov Institute of Semiconductor Physics NASU), L. Lajaunie (INA, Universidad de Zaragoza, Spain), G. Y. Rudko, V. S. Lysenko (Lahkaryov Institute of Semiconductor Physics NASU), S. V. Sevostianov, V. A. Tertykh (Chuiko Institute of Surface Chemistry, Ukraine), Y. P. Piryatinski (Institute of Physics, Ukraine), M. Cannas, L. Vaccaro (DFC, Universita degli Studi di Palermo, Italy), R. Arenal (INA, Universidad de Zaragoza, Spain), and A. N. Nazarov (Lashkaryov Institute of Semiconductor Physics NASU)

Hybrid- and Hetero-Nanocrystals – 14:00 – 16:00**Co-Chairs: Nelson L. Rowell and Isabelle Berbezier**

- 14:00 **1150** *(Invited)* Controlling Optical Properties of Semiconductor Nanocrystals: Chiral Quantum Dots and Luminescent Solar Concentrators – V. E. Ferry (University of Minnesota)
- 14:40 **1151** *(Invited)* One-Pot Syntheses of Polymer/Cd Chalcogenide Hybrids for Optoelectronic Applications – C. Luscombe (University of Washington)
- 15:20 **1152** *(Invited)* Advanced Semiconductor Hetero-Nanocrystals for Lasing – B. Guzel Turk (Bilkent University UNAM, Stanford University) and H. Volkan Demir (Bilkent University UNAM, NTU Singapore)

D02**Plasma and Thermal Processes for Materials Modification, Synthesis, and Processing 2**Dielectric Science and Technology / Sensor
Room 306, Washington State Convention Center**Materials Processing 1 – 08:00 – 12:30****Co-Chairs: Uros Cvelbar, Peter Mascher, and Oana Leonte**

- 08:00 **1175** *(Invited)* Plasma Biofilm Decontamination: What Happens to the Underlying Surface? – J. L. Walsh (Liverpool University), M. Modic, J. Kovac (Jozef Stefan Institute), M. Hasan (Liverpool University), and U. Cvelbar (Jozef Stefan Institute)

- 08:40 **1176** *(Invited)* Atmospheric Pressure Plasma and Depositions of Antibacterial Coatings – M. Modic (Jozef Stefan Institute), A. Nikiforov, C. Leys, I. Kuchakova (Ghent University), M. De Vrieze (CentexBel), M. Petrovska (Institute of Microbiology and Parasitology), A. Zille (University of Minho), G. Dinescu, B. Mitu (NILPRP), and U. Cvelbar (Jozef Stefan Institute)
- 09:20 **1177** *(Invited)* Diagnosing Turbulent Reactive Flow in Non-Equilibrium Plasma Liquid Systems – S. Reuter, A. Dogariu, B. Goldberg (Princeton University), J. Schäfer (Leibniz inst. for Plasma Sci. and Technol. Greifswald), M. Shneider, A. Starikowskiy (Princeton University), K. D. Weltmann (Leibniz inst. for Plasma Sci. and Technol. Greifswald), Y. Zhang, and R. B. Miles (Princeton University)
- 10:00 Break
- 10:30 **1178** *(Invited)* Low Pressure and Atmospheric Pressure Plasma Interactions with Molten Metals and Liquid Droplets for Materials Processing – M. K. Sunkara (Conn Center for Renewable Energy Research, University of Louisville), D. F. Jaramillo-Cabanzo (University of Louisville), and B. Ajayi (Conn Center for Renewable Energy Research)
- 11:10 **1179** *(Invited)* Building Graphene Nanowalls with Plasma: Processing, Functionalization, and Challenges – U. Cvelbar, N. M. Santhosh (Jozef Stefan Institute), and G. Filipič (Jozef Stefan International Postgraduate School)
- 11:50 **1180** *(Invited)* Fundamentals and Applications of Directional and Isotropic Atomic Layer Etching – V. Vahedi and T. Lill (Lam Research)

Materials Processing 2 – 14:00 – 17:30**Co-Chairs: Dennis W. Hess, Uros Cvelbar, and Sreeram Vaddiraju**

- 14:00 **1181** *(Invited)* Beyond the Highs and Lows: A Selectively Colorful Yet Chilly Perspective on the Future of Dielectrics in Nanoelectronic Devices – S. W. King (Intel Corporation)
- 14:40 **1182** Effect of Cu, Ni Seeds on the Formation of Uniform Ag Layer on PET Film Via Atmospheric Pressure Plasma Reduction – H. J. Oh, V. D. Dao, and H. S. Choi (Chungnam National University)
- 15:00 **1183** UV Assisted Densification of Perhydropolysilazane (PHPS) Based Spin-on Glass in High Aspect Ratio Gap Fill Structure – S. Mehta (IBM Research, IBM assignee @ Global Foundries, Inc.), R. H. Sheng (Global Foundries, Inc.), R. Krishnan (Global Foundries), B. Haran (IBM Research), T. Han, M. Berardi, Z. Bayindir, B. Yatzor, J. Liu (Global Foundries, Inc.), J. Shepard (Global Foundries), and S. Grunow (GLOBALFOUNDRIES Inc)
- 15:20 **1184** Effect of Cathodic Current on the Microstructure and Characteristics of Micro-Arc Oxidation Ceramic Coatings on 7075 Aluminum Alloy – T. Y. Wang and H. C. Lin (Department of Materials Science and Engineering, NTU)

- 15:40 **1185** Reaction Mechanisms of Halogenated Silanes on N-Rich Surfaces during Atomic Layer Deposition of Silicon Nitride – G. P. Hartmann (University of Texas at Austin), P. Ventzek (Tokyo Electron America Inc.), T. Iwao, K. Ishibashi (Tokyo Electron Technology Solutions Ltd.), and G. S. Hwang (University of Texas at Austin)
- 16:00 Break
- 16:10 **1186** Internal Photoemission Spectroscopy Measurements of the Energy Barrier Heights between ALD Dielectrics and Ta-Based Amorphous Metals – M. A. Jenkins, T. Klarr, J. M. McGlone, J. F. Wager, and J. F. Conley Jr. (Oregon State University)
- 16:30 **1187** Characterization of Low-Temperature Atomic Layer Deposited Cobalt Oxide – K. E. K. Holden, M. A. Jenkins, and J. F. Conley Jr. (Oregon State University)
- 16:50 **1188** Properties of Annealed ALD Ru from Ru(DMBD)(CO)₃ and Oxygen – M. H. Hayes and J. F. Conley Jr. (Oregon State University)
- 17:10 **1189** Optical and Electrical Properties of ECR-PECVD Grown SiCN Thin Films – A. Abdelal, Z. Khatami, and P. Mascher (McMaster University)

Ballroom 6ABC, Washington State Convention Center

D02 Poster Session – 18:00 – 20:00

Co-Chairs: Sreeram Vaddiraju and Uros Cvelbar

- **1190** Versatile Duplex Electrochemical Sensor for the Detection of CO₂ and Relative Humidity Using Room Temperature Ionic Liquid – A. Bhide (University of Texas at Dallas), B. Jagannath (The University of Texas at Dallas), E. Graef, and S. Prasad (University of Texas at Dallas)
- **1191** Atomic Layer Deposition of ZnO and Doped ZnO As Alternative Transparent Conducting Oxides for Photovoltaics – L. P. Ryan (Tyndall National Institute UCC), A. Walsh (Tyndall National Institute), M. M. McCarthy (Tyndall National Institute UCC), S. Monaghan (University College Cork), M. Modreanu (Tyndall National Institute), C. Romanitan (Institute of Microtechnology, Romania), O. Chaix-Pluchery (Laboratoire des Matériaux et du Génie Physique (LMGP)), S. O'Brien, M. E. Pemble (Tyndall National Institute), and I. M. Povey (Tyndall National Institute UCC)
- **1192** A-Si Planarization By Inductively Coupled Plasma Etch with Advanced Process Control – Y. Wang (Semiconductor Manufacturing International Corporation), D. Zhang (Semiconductor Manufacturing International Corporation), and H. Zhang (Semiconductor Manufacturing International Corporation)
- **1193** Plasma Etch Variation Control in Double Patterning Based Metal Hard Mask Open Process – S. Wang, D. L. Yao, J. Y. Huang, M. D. Hu, K. F. Yuan, Y. Wang, J. Q. Zhou, Q. Y. He, and H. Zhang (Semiconductor Manufacturing International Corporation)
- **1194** Synthesis and Evaluation of Naphthalene Anhydride Fluorescence Dichroic Liquid Crystal Dye – X. Li (Dalian University of Technology)

E02 Surfactant and Additive Effects on Thin Film Deposition, Dissolution, and Particle Growth Electrodeposition
Room 211, Washington State Convention Center

Surfactant Mediated Nucleation and Growth 1 – 08:00 – 12:00
Co-Chairs: Thomas P. Moffat and Benjamin Wiley

- 08:00 **1221** (*Keynote*) Surfactant and Halide Control in Gold Nanorod Synthesis – C. Murphy (University of Illinois)
- 08:40 **1222** (*Invited*) The Role of Pyridine Derivatives in the Formation of Anisotropic Gold Nanoparticles – I. J. Burgess (University of Saskatchewan)
- 09:20 **1223** Gold Deposition Using Accelerating Adsorbates: From Superfill and Smoothing to Nanowire Growth – D. Josell and T. P. Moffat (NIST)
- 09:40 Break
- 10:00 **1224** (*Invited*) Electrochemical Growth Mediated By Nanocluster Aggregation – J. Ustarroz (Vrije Universiteit Brussel, SURF Group)
- 10:40 **1225** (*Invited*) Tracking Hydrodynamic Signatures of Metal Nucleation Events Via Lateral Molecular Force Microscopy – D. Fermin (School of Chemistry, University of Bristol), D. Plana (University of Keele), R. Harniman, and M. Miles (University of Bristol)
- 11:20 **1226** (*Invited*) Pb UPD ML As Universal Surfactant for Electrochemical Thin Film Growth – S. Brankovic, D. Wu (University of Houston), Y. Dordi, and A. Joi (Lam Research Corporation)

Surfactant Mediated Nucleation and Growth 2 – 14:00 – 16:00
Co-Chairs: Benjamin Wiley and Peter Broekmann

- 14:00 **1227** (*Keynote*) Surface Capping and the Shape Evolution of Colloidal Metal Nanocrystals – Y. Xia (Georgia Institute of Technology)
- 14:40 **1228** Determining the Facet-Selective Electrochemistry That Drives Anisotropic Growth of Cu Nanowires – B. J. Wiley, M. J. Kim, and S. Alvarez (Duke University)
- 15:00 **1229** (*Invited*) On-Colloid Lithography: Surface Chemistry Guided Metal Deposition in Hotspots – J. E. Millstone (University of Pittsburgh)
- 15:40 **1230** Atomic Layer Deposition Using Self-Terminated Electrodeposition Reactions – T. P. Moffat (NIST), Y. Liu (Lam Research Corporation), S. H. Ahn (National Institute of Standards and Technology), N. L. Ritzert (Theiss Research/NIST), R. Wang (Argonne National Laboratory), E. Gillette (University of Maryland), D. Gokcen (National Institute of Standards and Technology), C. Hangarter (U.S. Naval Research Laboratory), H. Tan (NIST, Gaithersburg, MD, USA), L. Bendersky (NIST), H. You (Argonne National Laboratory), and U. Bertocci (National Institute of Standards and Technology)

General Session 1 – 09:00 – 12:00**Co-Chair: John N. Harb**

- 09:00 1269 High-Throughput Electrosynthesis with Flow-through Electrodes Made from Cu Nanowires – B. J. Wiley, M. J. Kim, and F. Yang (Duke University)
- 09:20 1270 Cell and Electrode Development for the Hydrogen Peroxide Production Via Partial Oxygen Reduction Reaction – C. Cremers, J. O. Meier, K. Pinkwart, and J. Tübke (Fraunhofer Institute for Chemical Technology (ICT))
- 09:40 1271 Electrolytic Processing of Kraft Black Liquor- Mass Transfer Investigation – J. N. Cloutier, J. Paris (Ecole polytechnique de Montréal), O. Savadogo (École Polytechnique de Montréal), M. Perrier (École Polytechnique Montréal, Montréal, QC, Canada), R. Labrecque (Laboratoire des Technologies de l'Énergie), and P. Champagne (LTE Hydro-Québec)
- 10:00 1272 Alternative Solution Additives for the Sustainable Electrolytic Production of Sodium Chlorate – B. Endrodi (University of Szeged, KTH - Royal Institute of Technology), S. Sandin, A. Stojanovic (KTH - Royal Institute of Technology), N. Simic, M. Wildlock (AkzoNobel Pulp and Performance Chemicals), and A. Cornell (KTH - Royal Institute of Technology)
- 10:20 Break
- 10:40 1273 Dissolution Induced Self-Selective Zn- and Ru-Doped TiO₂ Structure for Electrochemical Generation of KClO₃ – R. G. Pala, K. Kishor, and S. Saha (Indian Institute of Technology Kanpur)
- 11:00 1274 Design of an Electrocatalytic Flow Reactor for the Electrosynthetic Aldol Reaction of Acetone – T. Breugelmanns, D. Pauwels (University of Antwerp, Research group ART), and J. Hereijgers (University of Antwerp, ART Group)
- 11:20 1275 Influence of Ni on the Activity of Co-Mo Electrocatalyst for Ethanol Oxidation – E. E. Kalu (Florida A&M University - Florida State University COE) and W. Chaitree (Florida State University)
- 11:40 1276 Electrochemical Activity of Non-Noble Metal Alloy as Catalyst Towards Oxidation of Glycerol in Acidic Media: A Case for the Conceptual Glycerol/Ferric Redox Flow Battery – E. E. Kalu (Florida A&M University - Florida State University COE), J. Akraasi, and Y. D. Yeboah (FAMU-FSU College of Engineering)

General Session 2 – 14:00 – 16:00**Co-Chair: Douglas P. Riemer**

- 14:00 1277 The Design and Construction of Integrated Si-Based Proton Exchange Membrane Fuel Cells (PEMFCs) with Improved Performances – J. Li (Xiamen University)

- 14:20 1278 Synthesis of Active Bimetallic Catalysts for Direct Methanol Fuel Cells – B. A. Tavakoli Mehrabadi, R. D. White, J. R. Regalbuto, J. W. Weidner, and J. R. Monnier (University of South Carolina)
- 14:40 1279 Electrochemistry of Iodide in LiCl-KCl Molten Salts and Anionic Chemla Effect: An Overview – N. Shrestha, B. Day, V. Utgikar, K. S. Raja (University of Idaho), G. Fredrickson, and S. Frank (Idaho National Laboratory)
- 15:00 1280 Carbon Deposition Diagnostics for Reliability and State-of-Health Assessment of SOFC – A. Ploner (Technical University of Denmark), A. Hagen (DTU Energy), and A. Hauch (DTU Energy Conversion, Technical University of Denmark)
- 15:20 1281 Impact of Size, Shape and Location of Reference Electrodes on Measuring Anode Potential – S. U. Kim (Robert Bosch LLC), V. Pande, V. Viswanathan (Carnegie Mellon University), and J. Christensen (Robert Bosch LLC)
- 15:40 1282 Prediction of Ce(III) Electrodeposition at Various Electrochemical Conditions in Molten LiCl-KCl Eutectic – Y. T. Jee and J. I. Yun (KAIST)

Silicon Compatible Materials, Processes, and Technologies for Advanced Integrated Circuits and Emerging Applications 8

Electronics and Photonics / Dielectric Science and Technology

Room 307, Washington State Convention Center

Plenary Session – 09:00 – 10:00**Co-Chair: Fred Roozeboom**

- 09:00 Welcoming Remarks
- 09:10 1367 (Invited) Negative Capacitance Transistors – S. Salahuddin (University of California, Berkeley)
- 09:50 Break

Technologies for Advanced Integrated Circuits – 10:00 – 12:00**Co-Chairs: Fred Roozeboom and Stefan De Gendt**

- 10:00 1368 (Invited) Extending Advanced CMOS Scaling with SiGe Channel Materials – R. J. Carter, R. Sporer, D. H. Triyoso, A. Child, G. R. Mulfinger, J. A. Wahl, T. J. Mcardle, G. J. Kluth, J. Fronheiser, J. R. Holt, K. Punchihewa, L. Vanamurthy, S. Beasor, U. Rana, and D. K. Sohn (GLOBALFOUNDRIES)
- 10:40 1369 (Invited) Laser Annealing in CMOS Manufacturing – O. Gluschenkov (IBM Research at Albany Nanotech) and H. Jagannathan (IBM Research)

- 11:20 **1370** Stress and Strain Evolution in Stacked Gate-All-Around Transistors for Sub-7nm Node Studied By Advanced Transmission Electron Microscopy Techniques and Finite Element Method Modelling – S. Reboh, R. Coquand (CEA, LETI, Minatec Campus, Université Grenoble Alpes), N. Loubet (IBM Research), N. Bernier (CEA, LETI, Minatec Campus, Université Grenoble Alpes), R. Chao (IBM Research), G. Audoit (CEA, LETI, Minatec Campus, Université Grenoble Alpes), J. L. Rouviere (CEA, INAC, Minatec Campus, Université Grenoble Alpes), S. Barraud (CEA, LETI, Minatec Campus, Université Grenoble Alpes), E. Augendre (Univ. Grenoble Alpes, CEA-LETI, MINATEC Campus), J. Li, R. Muthinti, J. Gaudiello (IBM Research), N. Gambacorti (CEA, LETI, Minatec Campus, Université Grenoble Alpes), T. Yamashita (IBM Research), and O. Faynot (Univ. Grenoble Alpes, CEA-LETI, MINATEC Campus)
- 11:40 **1371** Pinch Off Plasma Chemical Vapor Deposition Process and Material Technology for Nano-Device Air Gap/Spacer Formation – S. V. Nguyen (IBM Research at Albany Nanotech), T. J. Haigh (IBM STR Research), K. Cheng (IBM), C. Penny (IBM Research at Albany Nanotech), C. Park (Global Foundries at Albany Nanotech), S. C. Mehta, T. Yamashita (IBM Research), L. Jiang, and D. Canaperi (IBM Research at Albany Nanotech)

Processes for Advanced Integrated Circuits 1 – 14:00 – 16:00

Co-Chairs: Zia Karim and Paul J. Timans

- 14:00 **1372** Characteristic Change of GeO₂ / Ge Interface By Hf-Post Metallization Annealing – H. Fujiwara, Y. Iwazaki, and T. Ueno (Faculty of Technology, Tokyo Univ. of Agri. and Tech.)
- 14:20 **1373** Low Temperature Growth of Germanium on Silicon Using RF-PECVD for Electronic and Optoelectronic Application – G. Dushaq (New York University, New York University), A. Nayfeh (Masdar Institute of Science and Technology, Abu Dhabi, UAE), and M. Rasras (New York University)
- 14:40 **1374** Improved C-V Hysteresis and Two-States Characteristics in MIS (p) Structure with Elongated Thin Metal Gate – C. D. Lin (National Taiwan University,) and J. G. Hwu (National Taiwan University)
- 15:00 **1375** Drop-in Electrodeposition Processes for Void-Free, High Aspect Ratio Structures of Five Metals – D. Josell and T. P. Moffat (NIST)
- 15:20 **1376** Cu/Cu Barrier Interconnect with Low Resistivity for the Application to the Next-Generation and High-Resolution Display Fabricated Using Microwave-Assisted Sputter – W. Jeong (KAIST), J. C. Do, J. R. Lee, W. W. Park (AVACO), J. Shin, and S. H. K. Park (KAIST)
- 15:40 **1377** Electrochemical Characterization of Ruthenium Using Potassium Bromate As Oxidizer for Titania Based CMP Slurry – K. Yadav, M. R, and N. V. S (National Institute of Technology Raipur)

H01 Wide Bandgap Semiconductor Materials and Devices 19

Electronics and Photonics
Room 213, Washington State Convention Center

Electronics and Photonics Division Award Address – 08:00 – 08:40

Co-Chair: Jennifer K. Hite

- 08:00 **1400** *(Electronics and Photonics Division Award Address)* Technological Issues and Design Rules of Electrodes for High-Efficiency GaN-Based Light-Emitting Diodes – T. Y. Seong (Korea University)

GaN Devices – 08:40 – 11:50

Co-Chair: Jennifer K. Hite

- 08:40 **1401** *(Invited)* Enhanced Light Output Power from Eu-Doped GaN Narrow-Band Red Light-Emitting Diodes By Actively Controlling Photon Fields – Y. Fujiwara, T. Inaba, K. Shiomi, and J. Tatebayashi (Osaka University)
- 09:10 **1402** Influence of Size and Current Density on the Optoelectrical Properties of Green III-Nitride Micro-Light-Emitting Diodes – D. H. Kim and T. Y. Seong (Korea University)
- 09:30 Break
- 09:50 **1403** *(Invited)* GaN Sensors and Electronics for Missions to Hot Planets – M. Rais-Zadeh (NASA JPL, University of Michigan)
- 10:20 **1404** *(Invited)* Gallium Nitride Device Technology for Commercial RF Applications – B. Green (NXP Semiconductors)
- 10:50 **1405** *(Invited)* Passivation of High K/GaN Interfaces for GaN Tunnel FETs – A. Kummel (University of California, San Diego), W. Li (University of Notre Dame), A. Kerr, E. Chagarov, S. Gu, T. Kaufman-Osborn (University of California, San Diego), S. Madisetti (SUNY College of Nanoscale Science and Engineering), J. Wu, P. Asbeck (University of California, San Diego), S. Oktyabrsky (College of NanoScience SUNY), and P. Fay (University of Notre Dame)
- 11:20 **1406** *(Invited)* Current-Induced Degradation in Bulk GaN Vertical Schottky Diodes – M. Porter (Naval Postgraduate School), R. J. Kaplar, G. W. Pickrell, A. A. Allerman (Sandia National Laboratories), P. Specht (University of California, Berkeley), and T. Weatherford (Naval Postgraduate School)

III-N Growth and Characterization – 13:30 – 16:00

Co-Chair: Travis J. Anderson

- 13:30 **1407** *(Invited)* Homoepitaxial GaN Growth on Free-Standing Substrates – J. K. Hite (U.S. Naval Research Laboratory), T. J. Anderson (NRL), M. A. Mastro (U.S. Naval Research Laboratory), L. E. Luna (US Naval Research Laboratory), J. C. Gallagher (NRL), and C. R. Eddy Jr. (Naval Research Laboratory)
- 14:00 **1408** *(Invited)* Two-Dimensional Wide Bandgap Materials for Electronic Applications – G. H. Lee (Yonsei University)
- 14:30 **1409** Electrical Properties of Silicon Doped GaN Activated By Ion Implantation – J. C. Gallagher, T. J. Anderson (NRL), L. E. Luna (US Naval Research Laboratory), A. D. Koehler, K. D. Hobart, and F. J. Kub (Naval Research Laboratory)
- 14:50 Break

- 15:00 **1410** Characterization of Homoepitaxial GaN Films on Commercial GaN Substrates – L. E. Luna (US Naval Research Laboratory), T. J. Anderson (NRL), J. K. Hite (U.S. Naval Research Laboratory), K. D. Hobart, and F. J. Kub (Naval Research Laboratory)
- 15:20 **1411** A Defect Density Profile Extraction Method for GaN Epi-Wafers – H. Kataoka, T. Hoshii, I. Muneta, H. Wakabayashi, K. Tsutsui, H. Iwai, K. Kakushima (Tokyo Institute of Technology), and T. Yamamoto (Sumitomo Chemical Co., Ltd.)
- 15:40 **1412** XPS Study of the Chemical Surface Engineering on Ultra-Thin InAlN Layers: Evaluation of Thermal Stability to Oxygen Exposure – Y. Bourlier, M. Bouttemy (Institut Lavoisier de Versailles UMR8180 CNRS-UVSQ), O. Patard, P. Gamarra, S. Piotrowicz (Microelectronic GaN, III-V Lab), J. Vigneron (Institut Lavoisier de Versailles UMR8180 CNRS-UVSQ), R. Aubry (Thales Research & Technology), S. Delage (Microelectronic GaN, III-V Lab), and A. Etcheberry (Institut Lavoisier de Versailles, UVSQ)

H02**Advanced CMOS-Compatible Semiconductor Devices 18**

Electronics and Photonics

Room 309, Washington State Convention Center

Devices Physics and Characterization 1 – 08:00 – 11:40

Co-Chairs: Joao Antonio Martino and Bich-Yen Nguyen

- 08:00 Welcoming Remarks
- 08:10 **1455** *(Invited)* Substrate and Device Engineering for Iot and Automotive – M. Sellier (SOITEC)
- 08:50 **1456** *(Invited)* Logic Devices for Today and Tomorrow – W. P. Maszara (GLOBALFOUNDRIES)
- 09:30 Break
- 10:00 **1457** *(Invited)* Ultra-Low Power III-V-Based Mosfets and Tunneling FETs – S. Takagi (JST-CREST), D. H. Ahn, T. Gotow (The University of Tokyo), and M. Takenaka (JST-CREST)
- 10:40 **1458** Impact of X-Ray Radiation on SOI Mosfet: Insulator Film Degradation and Hot-Carrier Reliability – Y. Omura (Kansai University, Dept. Electronics)
- 11:00 **1459** On/Off Current Ratio Enhancement By Reducing Electrode Separation in Gate-Controlled MIS Tunnel Transistor – C. H. Chan and J. G. Hwu (National Taiwan University)
- 11:20 **1460** Improvement of g_m/I_D Method for Detection of Self-Heating Effects – C. A. B. Mori (University of Sao Paulo), P. G. D. Agopian (UNESP, Sao Joao da boa Vista), and J. A. Martino (University of Sao Paulo)

Process Technology and Simulation – 14:00 – 16:00

Co-Chairs: Siegfried Selberherr and Francisco Gamiz

- 14:00 **1461** *(Invited)* Process Variability for Devices at and Beyond the 7 Nm Node – J. K. Lorenz (Fraunhofer IISB)
- 14:40 **1462** *(Invited)* 3D Monolithic Integration – L. Brunet, P. Batude, C. Fenouillet-Beranger, F. Andrieu, and M. Vinet (CEA-LETI MINATEC Campus)

- 15:20 **1463** Study of Lanthanum Diffusion in HfO₂-Based High-k Gate Stack – M. Zhu, B. Kannan, Y. Zhang, M. Medikonda, Y. Liang, J. Li, A. Dasgupta, L. Pantisano, M. Ozbek, S. Siddiqui (GLOBALFOUNDRIES), and J. Liu (Global Foundries, Inc.)
- 15:40 **1464** Low-Temperature RF Plasma Treatment Effect on Junctionless Pd-Al₂O₃-Ingaas Misfet Operation – A. Nazarov, Y. V. Gomeniuk (Lashkaryov Institute of Semiconductor Physics NASU), Y. Y. Gomeniuk, P. N. Okholin (Lashkaryov Institute of Semiconductor Physics NASU), T. M. Nazarova (NTUU “Igor Sikorski KPI”), V. Djara (Tynall National Institute), K. Cherkaoui (Tyndall National Institute, University College Cork), and P. K. Hurley (Tyndall National Institute, University Cork, Cork)

Ballroom 6ABC, Washington State Convention Center**H02 Poster Session – 18:00 – 20:00**

- **1465** Study of the Influence of the Dielectric Composition of Al/Ti/ZrO₂:Al₂O₃/TiN/Si/Al Structures on the Resistive Switching Behavior for Memory Applications – H. Castán, S. Dueñas (UNIVERSIDAD DE VALLADOLID), Ó. G. Ossorio (University of Valladolid), K. Kukli (University of Helsinki, University of Tartu), M. Kemell, M. Ritala, and M. Leskelä (University of Helsinki)
- **1466** Using a Non-Conventional Layout Style to Improve Pass Device Performance in CL-LDO Voltage Regulators – R. F. Martucci and S. P. Gimenez (University Center of FEI)
- **1467** Experimental Study for Mosfet with Ellipsoidal Layout – W. S. Cruz and S. P. Gimenez (University Center of FEI)
- **1468** Parasitic Conduction on Ω -Gate Nanowires SOI nMOSFETs – V. C. P. Silva, J. A. Martino (University of Sao Paulo), and P. G. D. Agopian (UNESP, Sao Joao da boa Vista)

H03**Solid-state Electronics and Photonics in Biology and Medicine 5**

Electronics and Photonics

Room 212, Washington State Convention Center

FET-Based Sensors – 08:00 – 12:10

Co-Chairs: Yu-Lin Wang and Xudong Wang

- 08:00 **1482** *(Invited)* Validation of the Ion-Responsive Urine Sensor for Prostate Cancer Detection – K. H. Lee (Korea Institute of Science and Technology (KIST), Korea University of Science and Technology (UST))
- 08:30 **1483** Ultra-High Sensitivity for Lead Ion Detection Beyond the Ideal Nernst Response with AlGaIn/GaN High Electron Mobility Transistors (HEMTs) – C. Y. Hsieh (NTHU), Y. T. Chen (Institute of NanoEngineering and MicroSystems), R. Sukesan, and Y. L. Wang (National Tsing Hua University)
- 08:50 **1484** Three-Dimensional Polymeric Biointerface for Ultra-Sensitive and Selective Detection of Low-Molecular-Weight Biomarker Using Semiconductor-Based Biosensor – S. Nishitani and T. Sakata (The University of Tokyo)

- 09:10 **1485** EDL Gated FET Biosensor Array for the Investigation of Ion Channels and Bioelectric Signals of Circulating Tumor Cells – A. K. Pulikkathodi, I. Sarangadharan, Y. H. Chen, G. B. Lee, and Y. L. Wang (National Tsing Hua University)
- 09:30 Break
- 10:00 **1486** *(Invited)* Toward Wireless Biosensing Using Transparent Graphene Electronics – P. Y. Chen and M. M. C. Cheng (Wayne State University)
- 10:30 **1487** Whole Blood CVD Diagnostics Using Portable FET Biosensor System – I. Sarangadharan, S. L. Wang, R. Sukesan, P. C. Chen, T. Y. Dai, A. K. Pulikkathodi, C. P. Hsu, and Y. L. Wang (National Tsing Hua University)
- 10:50 **1488** Towards Electronic Detection of DNA Conformational Transition – S. R. Patil (Dept. of Physics, COEP, Pune, MS, India), N. Singh (Dept. of Mechanical Engineering, IIT Kanpur, India), P. Pant (Department of Chemistry, IIT Delhi 110016 New Delhi, India), N. Sinha (Dept. of Mechanical Engineering, IIT Kanpur, India), and M. P. Anantram (Electrical Engg., Uni. of Washington, Seattle, WA, USA.)
- 11:10 **1489** A Reconfigurable Field-Effect Sensor By Single-Layer Graphene for Opto-Electro-Chemical Sensing Applications – W. E. Hsu (Graduate Institute of Electronics Engineering, National Taiwan University), T. A. Ku, C. Y. Lee, C. I. Wu (Graduate Institute of Photonics and Optoelectronics, National Taiwan University), and C. T. Lin (Graduate Institute of Electronics Engineering, National Taiwan University)
- 11:30 **1490** Biosensor with a 4-Channel Disposable Sensing Module Facilitating a Direct Sensitive Detection of Colon Cancer Biomarkers in Serum – S. Park (Korea Institute of Science and Technology(KIST), Korea University of Science and Technology(UST)), M. Jeun (Korea Institute of Science and Technology(KIST)), and K. H. Lee (Korea Institute of Science and Technology(KIST), Korea University of Science and Technology (UST))
- 11:50 **1491** Leveraging Nano-Confinement Properties of Room Temperature Ionic Liquids for Sensitive Detection of Biomolecules in Complex Biological Buffers – B. Jagannath (The University of Texas at Dallas), S. Muthukumar (Enlissense LLC), and S. Prasad (University of Texas at Dallas)

Energy Harvesting, Storage, and Self-Powered Applications 1 – 14:00 – 16:00

Co-Chairs: Youfan Hu and Mark Ming-Cheng Cheng

- 14:00 **1492** *(Invited)* Implantable Flexible Nanogenerators for Biomechanical Energy Harvesting – X. Wang (University of Wisconsin Madison)
- 14:30 **1493** *(Invited)* Piezoelectric Peptide-Based Energy Harvesters – R. Yang (University of Minnesota)
- 15:00 **1494** *(Invited)* Printed Flexible Sensor-Integrated Wearable Healthcare Patch – K. Takei (Osaka Prefecture University)
- 15:30 **1495** *(Invited)* Flexible Triboelectric Nanogenerator and Highly Sensitive Pressure Sensor – F. Fan (University of California Santa Barbara)

H04

Wearable and Flexible Electronic and Photonic Technologies

Electronics and Photonics / Dielectric Science and Technology / Energy Technology / Physical and Analytical Electrochemistry / Sensor / Interdisciplinary Science and Technology Subcommittee

Room 214, Washington State Convention Center

Session 1 – 08:00 – 12:30

Co-Chairs: Ajit Khosla and Sheng Xu

- 08:00 **1532** *(Invited)* 3D Printing Functional Materials & Devices – M. C. McAlpine (University of Minnesota)
- 08:30 **1533** *(Invited)* Triboelectric Nanogenerator for Self-Powered Flexible Electronics and Internet of Things – Z. L. Wang and A. C. Wang (Georgia Institute of Technology)
- 09:00 **1534** *(Invited)* Wearable Microfluidic and Electronic Frameworks for Biomedical Applications – B. L. Gray and D. Chung (Simon Fraser University)
- 09:30 Break
- 10:00 **1535** *(Invited)* Imperceptible Graphene Based Electronic Tattoo Sensors – S. Kabiri Ameri, N. Lu, and D. Akinwande (The University of Texas at Austin)
- 10:30 **1536** *(Invited)* Design of Silicon Structures for Optically-Controlled Bointerfaces – B. Tian (the University of Chicago)
- 11:00 **1537** *(Invited)* Micatronics: A New Platform for Flexible X-Tronics – Y. H. Chu (National Chiao Tung University)
- 11:30 **1538** *(Invited)* Flexible Organic Sensors for Biomechanical Measurements – M. Amit, Y. Zhai (University of California San Diego), Z. Wu (UC San Diego), and T. N. Ng (University of California San Diego)
- 12:00 **1539** *(Invited)* A Nature-Inspired Porous Electrode for Flexible, Stretchable Supercapacitors and Lithium-Ion Batteries – M. Gao, Y. C. Lin, C. C. Shih (National Taiwan University), W. Y. Lee (National Taipei University of Technology), C. C. Chueh, and W. C. Chen (National Taiwan University)

Session 2 – 14:00 – 16:00

Co-Chair: Colm O'Dwyer

- 14:00 **1540** *(Invited)* Organic Haptics: Soft Materials for Artificial Touch – D. Lipomi (University of California, San Diego)
- 14:30 **1541** *(Invited)* Soft/Hard Interface for Energy Materials and Skin-like Electronics Toward Healthcare Monitoring – J. W. Lee (Dept. of MSE in Pusan National University)
- 15:00 **1542** *(Invited)* Fully-Wireless Health-Monitoring System with Near-Field Communication – J. Kim (Kwangwoon University)
- 15:30 **1543** *(Invited)* Inkjet-Printed Stretchable Electronic Devices, Circuits, Sensors, and Displays – C. Wang, L. Cai, S. Zhang, Y. Zhang, and J. Miao (Michigan State University)

Oxygen or Hydrogen Evolution Catalysis for Water Electrolysis 4

Energy Technology / Industrial Electrochemistry and Electrochemical Engineering / Physical and Analytical Electrochemistry
Room 606, Washington State Convention Center

OER for PEM Electrolysis 1 – 08:00 – 12:00

Co-Chairs: Hui Xu, Pawel J. Kulesza, and Katherine E. Ayers

08:00		Welcoming Remarks
08:10	1637	<i>(Invited)</i> High Power Water Electrolysis as a New Paradigm for Operation of PEM Electrolyzer – The Story Continues – K. A. Lewinski, S. M. Luopa, F. Sun (3M Company), C. Jentsch (3M Corporation), and D. F. van der Vliet (3M Company)
08:40	1638	A Regular Dimpled Surface Morphology for the Oxygen Evolution Reaction – A. K. Taylor, I. Andreu, and B. D. Gates (Simon Fraser University)
09:00	1639	<i>(Invited)</i> Membranes with Recombination Catalyst for Hydrogen Crossover Reduction: Water Electrolysis – D. Bessarabov (NWU HySA Infrastructure)
09:30	1640	Ultra-Low Platinum Group Metal (PGM) Containing (Mn _{1-x} Ir _x)O ₂ :10F - Highly Active and Durable Oxygen Evolution Electrocatalyst for PEM Water Electrolysis – S. D. Ghadge (Dept. of Chemical Engineering, University of Pittsburgh), P. P. Patel, O. I. Velikokhatnyi, M. K. Datta, and P. N. Kumta (University of Pittsburgh)
09:50		Intermission
10:00	1641	<i>(Invited)</i> Pyrochlore-Type, Acid-Stable Electrocatalysts for Oxygen Evolution Reaction – H. Yang (University of Illinois at Urbana-Champaign)
10:30	1642	Morphology Tuning of Ir Oxide Nanoparticles for Water Oxidation in PEM Water Electrolyzer – J. Lim (Korea Advanced Institute of Science and Technology, Lawrence Berkeley National Laboratory) and H. Lee (Korea Advanced Institute of Science and Technology)
10:50	1643	IrOx/Nafion Catalyst for Oxygen Evolution: Effect of Surface Oxide on Activity and Stability – H. Yu (University of Connecticut), J. Roller (FEI Company), L. J. Bonville, and R. Maric (Center for Clean Energy Engineering)
11:10	1644	Oxygen Evolution Reaction Investigation on Pt(111) and Ir(111) Using Dynamic Electrochemical Impedance Spectroscopy in Acidic Medium – M. Scohy (Univ. Grenoble Alpes, LEPMI, F-38000 Grenoble, France), L. Dubau, F. Maillard (CNRS, LEPMI, F-38000 Grenoble, France, Univ. Grenoble Alpes, LEPMI, F-38000 Grenoble, France), E. Sibert (Univ. Grenoble Alpes, LEPMI, F-38000 Grenoble, France, CNRS, LEPMI, F-38000 Grenoble, France), and S. Sunde (Norwegian University of Science and Technology)
11:30	1645	<i>(Invited)</i> Techno-Economic Perspectives of Catalysts Development for Low Temperature Water Electrolysis – H. Xu (Giner, Inc.), S. Zhao (Giner, Inc.), and C. K. Mittelsteadt (Giner, Inc.)

EMN HydroGen Consortium Talks and Discussion – 13:30 – 16:05

Co-Chairs: Huyen N. Dinh and Katherine E. Ayers

13:30		Introductory Remarks
13:35	1646	<i>(Invited)</i> Hydrogen Is an AWSM Energy Materials Network! – H. N. Dinh (National Renewable Energy Laboratory), K. Randolph (U.S. Department of Energy), A. Z. Weber (Lawrence Berkeley National Laboratory), A. H. McDaniel (Sandia National Labs), R. Boardman (Idaho National Laboratory), T. Ogitsu (Lawrence Livermore National Laboratory), H. Colon-Mercado (Savannah River National Laboratory), D. Peterson, J. W. Vickers, and E. L. Miller (U.S. Department of Energy)
14:05	1647	<i>(Invited)</i> Low Temperature Electrolysis for Hydrogen and Oxygen Generation - a Tutorial on Catalyst and Electrode Development for Proton and Anion Exchange Membrane-Based Systems – K. E. Ayers (Proton OnSite)
14:35	1648	<i>(Invited)</i> An Overview of H ₂ @Scale and Water Splitting Protocol Development – J. Holladay (Pacific Northwest National Laboratory), B. S. Pivovar (National Renewable Energy Laboratory), K. E. Ayers (ProtonOnsite), O. A. Marina (Pacific Northwest National Laboratory), E. B. Stechel (ASU-LightWorks), and C. Xiang (California Institute of Technology)
15:05		LTE & HTE Benchmarking Discussion

Ballroom 6ABC, Washington State Convention Center

103 Poster Session – 18:00 – 20:00

Co-Chairs: Hui Xu and Shuai Zhao

•	1649	The Bifunctional Electrocatalyst SiO ₂ -SO ₃ H Supported Pt for Unitized Regenerative Fuel Cells – H. Y. Jung, J. H. Jung, and M. H. Lim (Chonnam National University)
•	1650	Oxidative Chemical Vapor Deposition of 3D Graphene Oxide on Nickel Foam for Hydrogen Evolution Reaction in Acidic Electrolyte – S. Sarawutanukul, N. Phattharasupakun, J. Wutthiprom, and M. Sawangphruk (Vidyasirimedhi Institute of Science and Technology)
•	1651	The Effect of Membrane and Catalyst for Cell Polarization of PEM Water Electrolysis – H. J. Ban (Korea Institute of Industrial Technology(KITECH)), M. Y. Kim (Korea Institute of Industrial Technology), Y. A. Kim (Chonnam National University), and H. S. Kim (Korea Institute of Industrial Technology (KITECH))
•	1652	Coral-like Feni(OH) _x @Ni Derived from Corrosion of Nickel As an Integrate Electrode for Efficient Overall Water Splitting – R. Xiang and Z. D. Wei (Chongqing University)
•	1653	Dual-Ligand Synergistic Modulated Nico-Sulphydroxides with High Activity and Stability As Oxygen Evolution Electrocatalysts – L. Peng, J. Shen, T. Lin, and Z. Wei (Chongqing University)

- **1654** Layer-Dependent Photoelectrochemical Performance of Multi-Layer Graphene Catalysts on Silicon Photocathode – U. Sim (Chonnam National University), J. Moon (Korea Basic Science Institute), J. Lee (Seoul National University), C. Jeon (Korea Basic Science Institute), S. Han, B. H. Hong, and K. T. Nam (Seoul National University)
- **1655** Stainless Steel Based Water Oxidation Catalyst Electrode for Solar-Chemical Production – M. Lee, Y. J. Hwang, and B. K. Min (Korea Institute of Science and Technology)
- **1656** Ordered Pt Nanopattern Catalysts through Self-Assembled Block Copolymer Template – Y. Gan (Guangzhou Institute of Energy Conversion), C. Yan (2 ST Nengyuan, Wushan, Tianhe, Guangzhou), and Z. Wang (Guangzhou Institute of Energy Conversion)
- **1657** IrO₂ Decorated Self-Doped TiO₂ Nanotube Arrays: A Binder-Free and More Stable Electrode for Oxygen Evolution Reaction in Acid Condition – Y. Shi, Z. Lu (Guangzhou Institute of Energy Conversion, CAS), Z. Wang (Guangzhou Institute of Energy Conversion), L. Guo, H. Tan, C. Guo (Guangzhou Institute of Energy Conversion, CAS), and C. Yan (2 ST Nengyuan, Wushan, Tianhe, Guangzhou)
- **1658** Highly Efficient Vitamin-B12 Pyrolyzed N-Co-C Electrocatalyst for Hydrogen Evolution Reaction – P. Sabhapathy (IAMS, Academia Sinica), W. F. Chen (National Taiwan University), I. Shown (Inst. of Atomic and Molecular Sci., Academia Sinica), T. C. Chou (CCMS, National Taiwan University), K. H. Chen (IAMS, Academia Sinica), and L. C. Chen (CCMS, National Taiwan University)
- **1659** Effect of Alloying on Electrodeposited Ni Electrocatalyst for Oxygen Evolution Reaction – J. J. Kim (Seoul National University, Institute of Chemical Process, Seoul National University), B. K. Kim (Seoul National University), S. K. Kim (Chung-Ang University), and S. K. Cho (Kumoh National Institute of Technology)
- **1660** Activity and Stability Relationship for Anion Doped CoS_xSe_{2-x} Dichalcogenides for the Hydrogen Evolution Reaction – Y. Li, S. Chatterjee, and J. D. Snyder (Drexel University)
- **1661** Cr- and Ti-Based Spinel As Materials for Anodic Catalyst Support in PEM Electrolysis Cells: Assessing Corrosion Stability and Support Role in Catalyst Activity of Corrosion Stable Ceramics – F. Fenini (Technical University of Denmark), K. K. Hansen (DTU Energy Conversion, Technical University of Denmark), C. Savaniu (School of Chemistry, U. of St. Andrews, Fife, KY16 9ST, UK), J. T. S. Irvine (University of St. Andrews, Scotland), and M. B. Mogensen (Technical University of Denmark)
- **1662** Hierarchical Carbon-Silicon Nanowire Heterostructures for Hydrogen Evolution Reaction – J. Moon (Korea Basic Science Institute) and U. Sim (Chonnam National University)

104**Materials for Low Temperature Electrochemical Systems 4**

Energy Technology / Industrial Electrochemistry and Electrochemical Engineering / Physical and Analytical Electrochemistry
Room 611, Washington State Convention Center

Supercapacitor and Battery – 08:00 – 10:00**Co-Chairs: Wei Gao and Gang Wu**

- 08:00 **1739** (Invited) Electrode and Electrolyte Design for Low-Temperature Supercapacitors – X. Wang and Y. Gogotsi (Drexel University)
- 08:40 **1740** Engineering Novel Fiber Structures As Wearable Supercapacitors – W. Gao (North Carolina State University)
- 09:00 **1741** (Invited) Tune Materials Structure and Chemistry for the Use of Micron Sized Silicon for Lithium-Ion Batteries – X. D. Zhou (University of Louisiana at Lafayette) and K. Mishra (University of South Carolina)
- 09:40 Break

PEMFC Performance 1 – 10:00 – 12:00**Co-Chairs: Anthony R. J. Kucernak and Sadia Kabir**

- 10:00 **1742** High Mass-Transport, Low Pt Loading Fuel Cell Electrodes – K. F. Fahy (Imperial College London), M. Laitz (Massachusetts Institute of Technology, Imperial College London), and A. R. J. Kucernak (Imperial College London)
- 10:20 **1743** Investigating the Effects of Catalyst Loading and MEA Conditioning on Commercial Pt/C and State-of-the-Art Pt-Alloy/C Performance in a PEMFC – S. Kabir, G. Bender, W. E. Klein, S. S. Kocha, and K. C. Neyerlin (National Renewable Energy Laboratory)
- 10:40 **1744** Impact of OER Catalyst Activity and Stability on PEMFC Fuel Starvation Caused Cell Reversal Tolerance – F. Afsahi (Ballard Power System, Inc.), P. He, K. Bai (Ballard Power Systems), R. Bashyam (Ballard Power System), and S. Knights (Ballard Power Systems)
- 11:00 **1745** Impact of Gas Stoichiometry on the Result of Accelerated Stress Tests – J. Mainka, S. Ait Hammou Taleb (LEMMA, CNRS, Vandoeuvre-lès-Nancy, LEMMA, Université de Lorraine, Vandoeuvre-lès-Nancy), J. Dillet, and O. Lottin (LEMMA, Université de Lorraine, Vandoeuvre-lès-Nancy, LEMMA, CNRS, Vandoeuvre-lès-Nancy)
- 11:20 **1746** Changes in Proton and Electron Transfer Resistance in Cathode Catalyst Layer of PEM Fuel Cell By Carbon Corrosion – S. Cho (Korea Institute of Energy Research (KIER), University of Science and Technology (UST)), G. G. Park (University of Science and Technology (UST), Korea Institute of Energy Research (KIER)), W. Y. Lee (Korea Institute of Energy Research), and S. D. Yim (Korea Institute of Energy Research (KIER), University of Science and Technology (UST))
- 11:40 Break

Energy Technology Division Research Award Address – 14:00 – 14:40**Co-Chair: Andrew M. Herring**

- 14:00 **1747** (Energy Technology Division Research Award Address) Hydroxide Exchange Membrane Fuel Cells for Affordable Zero-Emission Cars – Y. Yan (University of Delaware)

Anion Exchange Membrane Fuel Cell 1 – 14:40 – 16:00
Co-Chairs: Andrew M. Herring and Yushan Yan

- 14:40 1748 High Performance Anion-Exchange Membranes and Ionomers for Use in Alkaline Membrane Fuel Cells – L. Wang, J. Ponce Gonzalez, R. Bance-Soualhi, D. Wheligan, and J. Varcoe (University of Surrey)
- 15:00 1749 A Practical Anion Exchange Membrane with Tunable Properties for High Performance and Chemical and Mechanical Stability – A. M. Herring, M. C. Kuo, S. Galito (Colorado School of Mines), and E. B. Coughlin (University of Massachusetts, Amherst)
- 15:20 1750 Evaluation of Poly(phenylene oxide)-Based Anion Exchange Membranes in Fuel Cells – A. E. Carlson (KTH Royal Institute of Technology), H. S. Dang (Lund University), G. Lindbergh, C. Lagergren (KTH Royal Institute of Technology), P. Jannasch (Lund University), and R. W. Lindström (KTH Royal Institute of Technology)
- 15:40 1751 Poly(aryl piperidinium) Based Hydroxide Exchange Membranes and Ionomers – J. Wang, Y. Zhao (University of Delaware), B. P. Setzler (Georgia Institute of Technology), L. Wang, K. Hu, S. Rojas-Carbonell, B. Xu, and Y. Yan (University of Delaware)

105 Renewable Fuels via Artificial Photosynthesis or Heterocatalysis 3

Energy Technology / Organic and Biological Electrochemistry / Physical and Analytical Electrochemistry
Room 612, Washington State Convention Center

Keynote Speech on Catalysis and Photocatalysis – 08:15 – 10:00
Co-Chairs: Nianqiang (Nick) Wu and Heli Wang

- 08:15 Introductory Remarks
- 08:20 1842 (Keynote) Photocatalytic Aspects of CsPbBr₃ Perovskite Nanocrystals – P. V. Kamat, R. Scheidt, G. Balakrishna, S. Kobosko, and V. Ravi (University of Notre Dame)
- 09:00 1843 (Keynote) Integrating Catalytic and Transport Functions within Multiscale Architectures – D. R. Rolison (U.S. Naval Research Laboratory)
- 09:40 Break

Artificial Photosynthesis 1 – 10:00 – 12:30
Co-Chairs: Nianqiang (Nick) Wu and Heli Wang

- 10:00 1844 (Invited) Solid-State Chemistry Meets Photoelectrochemistry: New Families of Ternary Oxides and Chalcogenides – K. Rajeshwar (University of Texas)
- 10:25 1845 (Invited) Driving Metal Oxide Water Oxidation Catalyst By Visible Light Absorber Separated By an Ultrathin Proton Conducting Silica Membrane with Embedded Molecular Wires – H. Frei (Lawrence Berkeley National Laboratory)
- 10:50 1846 (Invited) Towards Unassisted Water-Splitting Systems: Development of Catalysts, Semiconductors, and Interfaces – T. F. Jaramillo (Stanford University)
- 11:15 1847 (Invited) A New Strategy to Enhance Long-Term Photostability of BiVO₄ Photoanodes for Solar Water Splitting – D. K. Lee and K. S. Choi (University of Wisconsin-Madison)
- 11:40 1848 (Invited) Electrocatalytic Ammonia Oxidation – F. Habib-Zadeh, S. Miller, T. Hamann, and M. Smith (Michigan State University)

- 12:05 1849 (Invited) Bridge Design for Photoactive Molecules at Interfaces – E. Galoppini (Rutgers University - Newark)

Artificial Photosynthesis 2 – 13:55 – 16:00
Co-Chair: Dongling Ma

- 13:55 1850 (Invited) Artificial Photosynthesis on III-Nitride Nanowire Arrays – Z. Mi (University of Michigan)
- 14:20 1851 (Invited) Designing Efficient Photoelectrochemical Solar Energy Conversion Devices and Their Integration with Redox Flow Battery Devices – S. Jin (Department of Chemistry, UW-Madison)
- 14:45 1852 (Invited) Visible Light-Driven Water Oxidation with Porphyrin Sensitizers and Water Oxidation Catalysts – H. Imahori (Kyoto University)
- 15:10 1853 (Invited) Understanding Charge Separation in Semiconductor for Efficient Photoelectrochemical Water Splitting – Y. J. Hwang, S. Y. Chae (Korea Institute of Science and Technology), and B. K. Min (Korea University)
- 15:35 1854 (Invited) On the Role of Electrocatalysts in the Process of Light-Driven Water Splitting – S. Fiechter (Helmholtz-Zentrum für Materialien und Energie), F. Xi (HZB), F. Boztheyev (National Laboratory Astana, Kazakhstan), F. F. Abdi (HZB), K. Ellmer (OUT-eV), P. Bogdanoff, and M. Kölbach (HZB)

106 Mechano-Electro-Chemical Coupling in Energy Related Materials and Devices 3

High Temperature Materials / Battery / Electrodeposition / Energy Technology
Room 613, Washington State Convention Center

Oxides for High Temp Electrochemistry 1 – 07:55 – 12:20
Co-Chair: Jason D. Nicholas and D. Noel Buckley

- 07:55 Introductory Remarks
- 08:00 1930 (Invited) Chemo-Mechanical Coupling Phenomena in Solid Oxide Fuel Cells – T. Kawada (Tohoku University)
- 08:40 1931 Probing Vacancy Behavior in Complex Oxide Heterostructured Films – J. Zhu (University of Massachusetts-Amherst), J. W. Lee, H. Lee (University of Wisconsin-Madison), L. Xie (Nanjing University), X. Pan (University of California-Irvine), R. A. De Souza (Institute of Physical Chemistry, RWTH Aachen University), C. B. Eom (University of Wisconsin-Madison), and S. S. Nonnenmann (University of Massachusetts-Amherst)
- 09:00 1932 Colossal Ionic Conductivity: Method of Measuring the Elastic Dipole of Charged States & a Reduced Model for the Screening of Heterolayer Structures – M. F. Francis (Los Alamos National Laboratories)
- 09:20 1933 Analysis of Electrochemomechanical Coupling in Non-Stoichiometric Oxide Thin Films – S. N. Raja, J. G. Swallow (Massachusetts Institute of Technology), S. R. Bishop (Dept. Mater. Sci. & Eng., MIT), Y. T. Chi (Massachusetts Institute of Technology), T. Chen (Dept. of Hydrogen Energy Systems, Kyushu University), N. H. Perry, H. L. Tuller (I2CNER, Kyushu University), and K. J. Van Vliet (Massachusetts Institute of Technology)

- 09:40 **1934** Tailoring Chemical Expansion in Zirconate-Cerate Proton Conductors – T. Chen (wpi-I2CNER, Kyushu University, Dept. of Hydrogen Energy Systems, Kyushu University), K. Leonard (wpi-I2CNER, Kyushu University), K. Sasaki (Dept. of Hydrogen Energy Systems, Kyushu University, wpi-I2CNER, Kyushu University), H. Matsumoto (wpi-I2CNER, Kyushu University), and N. H. Perry (wpi-I2CNER, Kyushu University, Department of Materials Science and Engineering, UIUC)
- 10:00 Break
- 10:20 **1935** *(Invited)* In-Situ Study of the Activated Lattice Oxygen Redox Reactions in Metal Oxides during Oxygen Evolution Catalysis – B. Han and Y. Shao-Horn (Massachusetts Institute of Technology)
- 11:00 **1936** Role of Strain in Surface Segregation of $\text{La}_{1-x}\text{Sr}_x\text{Co}_{0.2}\text{Fe}_{0.8}\text{O}_3$ – Y. Yu, K. F. Ludwig, S. Gopalan, U. B. Pal, and S. N. Basu (Boston University)
- 11:20 **1937** Verification of Strain-Induced Fast Ionic Conduction in Thin-Film Electrolyte Via Experimental and Computational Study – J. Ahn (Korea Institute of Science and Technology), H. I. Ji (KIST), H. Kim (Korea Institute of Science and Technology), J. W. Son (Korea Institute of Science and Technology (KIST)), H. W. Jang (Seoul National University), and J. H. Lee (Korea Institute of Science and Technology (KIST))
- 11:40 **1938** Scanning Thermo-Ionic Microscopy: Probing Nanoscale Mechano-Chemical Via Thermal Stress-Induced Oscillation – E. Nasr Esfahani, B. S. Gerwe, S. B. Adler, and J. Li (University of Washington)
- 12:00 **1939** Detecting Dynamic Manipulation of the Space Charge Region in Doped Ceria with Scanning Thermo-Ionic Microscopy – B. S. Gerwe, E. Nasr Esfahani, J. Li, and S. B. Adler (University of Washington)
- Oxides for High Temp Electrochemistry 2 – 14:00 – 16:00**
Co-Chair: Nicola H. Perry
- 14:00 **1940** *(Invited)* Computing the Anisotropic Chemical Strain in Non-Stoichiometric Oxides for Solid Oxide Fuel Cell and Li-Ion Battery Applications – Y. Qi, C. James, T. Das, J. D. Nicholas (Michigan State University), L. Nation, and B. W. Sheldon (Brown University)
- 14:40 **1941** Density Functional Theory Modeling of Cation Diffusion in Bulk Lanthanum Manganite and Tetragonal Zirconia for Solid Oxide Fuel Cell Applications – Y. L. Lee, Y. Duan (US Dept of Energy: National Energy Technology Laboratory), D. Morgan (University of Wisconsin - Madison), D. Sorescu (US Dept of Energy: National Energy Technology Laboratory), H. Abernathy (AECOM), and G. A. Hackett (U.S. DOE National Energy Technology Laboratory)
- 15:00 **1942** Using Mechano-Electro-Chemical Coupling to Measure the Thin Film Elastic Constants, Thermo-Chemical Expansion Coefficients, and Oxygen Surface Exchange Coefficients of Praseodymium Doped Ceria Presentation – Y. Ma and J. D. Nicholas (Michigan State University)
- 15:20 **1943** Effect of Dispersion of Platinum Nanoparticles in Strontium Zirconate and Strontium Cerate Proton Conductors – Y. Takamura (Department of Hydrogen Energy System, Kyushu University), K. Leonard (WPI-I2CNER, Kyushu University), and H. Matsumoto (wpi-I2CNER, Kyushu University)
- 15:40 **1944** The Interplay of Strain and Defect Association on the Conductivity Rare Earth Substituted CeO_2 – G. F. Harrington (Kyushu University, Massachusetts Institute of Technology), N. H. Perry (Massachusetts Institute of Technology, I2CNER, Kyushu University), K. Sasaki (Kyushu University), B. Yildiz (Massachusetts Institute of Technology), and H. L. Tuller (I2CNER, Kyushu University, Massachusetts Institute of Technology)

107

Energy Conversion Systems Based on Nitrogen Energy Technology

Room 614, Washington State Convention Center

Overview of Ammonia and Renewable Energy – 08:00 – 12:20

Co-Chairs: Gang Wu, Hui Xu, and Julie N. Renner

- 08:00 **1993** *(Invited)* ARPA-E Refuel Program: Electrochemical Synthesis and Utilization of Sustainable Fuels – G. L. Soloveichik (Advanced Research Projects Agency-Energy (ARPA-E))
- 08:30 **1994** *(Invited)* Electrochemical Ammonia Synthesis - Facts or Dreams? – I. Chorkendorff (Technical University of Denmark)
- 09:00 **1995** *(Invited)* Nitrogenase Electrochemistry for Ammonia Production – R. Cai, R. Milton, S. Abdellaoui (University of Utah), A. L. De Lacey, M. Pita (Instituto de Catalis y Petroleoquimica, CSIC), S. Sahin (Suleyman Demirel University), and S. Minteer (University of Utah)
- 09:30 Break
- 10:00 **1996** Challenges and Opportunities Involving Electrochemical Processes for the Sustainable Production of Ammonia – T. F. Jaramillo (Stanford University)
- 10:30 **1997** *(Invited)* Direct Ammonia Fuel Cell Enabled By Precious-Metal-Free Cathode – Y. Zhao, B. P. Setzler, J. Wang, and Y. Yan (University of Delaware)
- 11:00 **1998** *(Invited)* Atmospheric Ammonia Synthesis – Mechanism, Materials and Processes – B. Liu (Kansas State University)
- 11:30 **1999** *(Invited)* Ammonia Synthesis Under Mild Condition – J. Guo and P. Chen (Dalian Institute of Chemical Physics)
- 12:00 **2000** DFT Analysis of N_2 Electroreduction Kinetics at the Electrode-Electrolyte Interface – M. J. Janik (Pennsylvania State University), G. Rostamikia (University of North Carolina - Wilmington), Y. Li (The Pennsylvania State University), and S. Maheshwari (Pennsylvania State University)

Catalysts for Ammonia Electrosynthesis and Oxidation – 13:50 – 16:00
Co-Chairs: Yuyan Shao and Lauren F. Greenlee

- 13:50 2001 *(Invited)* A Surface Enhanced Infrared Absorption Spectroscopy Study on the Nitrogen Electrochemical Reduction Reaction on Gold Surfaces – Y. Yao (The Hong Kong University of Science and Technology, South University of Science and Technology of China), S. Zhu (The Hong Kong University of Science and Technology), H. Wang, H. Li (South University of Science and Technology of China), and M. Shao (The Hong Kong University of Science and Technology)
- 14:20 2002 Bimetallic Nanoparticle Catalyst Synthesis and Design: Progress Toward Electrochemical Nitrogen Reduction – D. Suttmitter, S. L. Foster, S. I. P. Bakovic (University of Arkansas), C. Loney (Case Western Reserve University), S. Maheshwari (Pennsylvania State University), M. J. Janik (The Pennsylvania State University), J. Renner (Case Western Reserve University), and L. F. Greenlee (University of Arkansas)
- 14:40 2003 Advancing Ammonia Synthesis through Plasma-Assisted Catalysis – P. Barboun, P. Mehta, F. Herrera, D. B. Go, W. Schneider, and J. C. Hicks (University of Notre Dame)
- 15:00 2004 A New Class of Carbon Catalysts for Nitrogen Reduction during NH₃ Electrosynthesis – S. Mukherjee, S. Gupta (University at Buffalo), and G. Wu (University at Buffalo, the State University of New York)
- 15:20 2005 Transition Metal Complexes for Catalytic N₂ Reduction and NH₃ Oxidation: Strategies for Making and Breaking N≡N and N-H Bonds – M. T. Mock, P. Bhattacharya, A. J. Kendall, D. E. Prokopchuk, M. Bullock, and E. S. Wiedner (Pacific Northwest National Laboratory)
- 15:40 2006 *(Invited)* Distributed NH₃ Synthesis Via Electrochemical Reduction of N₂ on Transition Metal Nitrides in a PEM Electrolyzer – B. Xu, Y. Yan, J. Nash, X. Yang, and J. Anibal (University of Delaware)

K01

13th Manual M. Baizer Memorial Symposium on Organic Electrochemistry

Organic and Biological Electrochemistry
Room 616, Washington State Convention Center

Organic and Biological Electrochemistry Division Manuel M. Baizer Award Address – 08:00 – 09:00
Co-Chair: Dennis G. Peters

- 08:00 2021 *(Organic and Biological Electrochemistry Division Manuel M. Baizer Award Address)* Molecular Electrochemistry of Fragile and Soft Molecular Systems – F. Maran (University of Padova)

Baizer Memorial Symposium Session 1 – 09:00 – 12:00
Co-Chairs: Mekki Bayachou and James D. Burgess

- 09:00 2022 Design and Synthesis of Photo-Clickable Au Nanoparticles and Polymers and Their Redox-Active Conjugate Materials – M. Workentin, W. Luo (The University of Western Ontario), P. Gobbo, R. Vasdev, and J. Gilroy (Western University)
- 09:20 2023 Microelectrode Arrays: Moving Toward the Synthesis of More Complex Surfaces – K. D. Moeller, N. H. Yeh, and B. Nguyen (Washington University in St. Louis)

- 09:40 Break
- 10:00 2024 Detection of the Bacterial Warfare Toxin, Pyocyanin, Using Transparent Carbon Ultramicroelectrode Arrays – K. J. Stevenson (Skolkovo Institute of Science and Technology), O. Simoska, and J. Shear (The University of Texas at Austin)
- 10:20 2025 Controlled Synthesis of Organic Frameworks of Pillar[6]Arene By Electrochemical Oxidation – S. Inagi, C. Tsuneishi, H. Nishiyama, I. Tomita (Tokyo Institute of Technology), and T. Ogoshi (Kanazawa University)
- 10:40 2026 The Influence of Water on the Double-Layer Capacitance of an Ionic Liquid – J. Friedl and U. Stimming (Newcastle University)
- 11:00 2027 Polymer Brush Made By Ionic Liquids and the Inhibition Effects for Biofilm Formation – H. Kanematsu (National Institute of Technology Suzuka College), A. Oizumi (National Institute of Technology, Suzuka College), T. Sato, T. Kamijo, S. Honma (National Institute of Technology, Tsuruoka College), D. M. Barry (Clarkson University), N. Hirai, A. Ogawa, T. Kogo, D. Kuroda (National Institute of Technology Suzuka College), and K. Tsunashima (National Institute of Technology Wakayama College)
- 11:20 2028 Post-Functionalization of P3HT Via Anodic Oxidation with High Current Efficiency – T. Kurioka, H. Nishiyama, I. Tomita, and S. Inagi (Tokyo Institute of Technology)
- 11:40 2029 Reactions Using Organo-Dications As Redox-Switchable Catalysts in Batch and Flow Systems – S. Suga, Y. Kurihara, T. Hirata, H. Tanaka, and K. Mitsudo (Okayama University)

Baizer Memorial Symposium Session 2 – 14:00 – 16:00
Co-Chairs: Graham T. Cheek and Jiří Ludvík

- 14:00 2030 Differences in Reactivity of Primary Amines, Diamines and Amino Acids with Orthophthalaldehyde – Spectroelectrochemistry and Structure of Products – J. Ludvík (J. Heyrovsky Institute of Physical Chemistry Prague), J. Donkeng, and K. Kantnerová (J. Heyrovský Institute of Physical Chemistry Prague)
- 14:20 2031 Electrochemical Behavior of 2-Halo-N-Phenylacetamides at a Carbon Cathode – A. G. Couto Petro and D. G. Peters (Indiana University)
- 14:40 2032 Electrochemical Versus Photochemical: Mechanism of Radical Cation Cyclizations – L. Gonzalez (Washington University in St. Louis), M. D. Graaf (AbbVie), and K. D. Moeller (Washington University in St. Louis)
- 15:00 2033 The Role of Hydrogen Bonding in Proton-Coupled Electron Transfer. It Does Not Have to be Concerted Pctet: The Case of Phenylenediamines and Pyridines in Acetonitrile – D. K. Smith, L. A. Clare, T. D. Pham, L. Rafou, A. Buenaventura, and C. Arthurs (San Diego State University)
- 15:20 2034 Redox-Dependent H-Bonding with Electroactive Ureas: The Effect of One Electron Vs. Two Electron Redox Couples – K. Logan, J. Donatelli, M. Jackson, L. A. Clare, and D. K. Smith (San Diego State University)

15:40 2035 Differential Pulse Voltammetry of Nitrobenzene – I. U. Haque (University of Engineering and Technology Lahore Pakistan)

Ballroom 6ABC, Washington State Convention Center

K01 Poster Session – 18:00 – 20:00

- 2036 Electrochemistry of (Thia)Calix[4]Arenes Bearing Various Redox Probes – A. Liška (J. Heyrovsky Institute of Physical Chemistry), K. M. Modi (J. Heyrovský Institute of Physical Chemistry Prague), and J. Ludvík (J. Heyrovsky Institute of Physical Chemistry Prague)
- 2037 Electrochemical Preparation of Aryl Mome Ethers – G. H. M. de Kruijff and S. R. Waldvogel (Johannes Gutenberg University Mainz, Graduate School Materials Science in Mainz)
- 2038 Electrosynthesis of Bio-Based Dicarboxylic Acids – A. L. Rauen and S. R. Waldvogel (Johannes Gutenberg University Mainz)
- 2039 Sustainable and Highly Robust Anodic C,C-Cross-Coupling Reaction of Phenols – B. Riehl and S. R. Waldvogel (Johannes Gutenberg University Mainz)

L01

Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry General Session

Physical and Analytical Electrochemistry
Room 620, Washington State Convention Center

Physical and Analytical General Session 1 – 08:00 – 12:00

Co-Chairs: James Radich and Kelsey A. Stoerzinger

- 08:00 2096 Mechanism of Ligand-Assisted Electrodeposition of La₂O₃ on Gold Electrochemical Quartz Crystal Microbalance Electrodes – A. Medina, C. F. Ivory, N. A. Wall (Washington State University), S. Clark (Washington State University, Pacific Northwest National Lab), and H. Beyenal (Washington State University)
- 08:20 2097 Mesoporous Mn₂O₃ Nanoparticles Via Hydrothermal Process for Supercapacitor Applications – Z. Y. Li, J. Song (Chonbuk National University), M. S. Akhtar, and O. B. Yang (CHONBUK NATIONAL UNIVERSITY)
- 08:40 2098 Electrodeposition and Photocharacterization of In₂Se₃ Thin Films Using PP-ALD for Use As a Potential Photoanode – P. Sisk (The University of Georgia), J. Czerniawski, and J. L. Stickney (University of Georgia)
- 09:00 2099 Photoelectrochemical Analysis of Tin Selenide (SnSe_x) Thin Films Formed Using Electrochemical Atomic Layer Deposition (E-ALD) – P. Howell and J. L. Stickney (University of Georgia)
- 09:20 2100 CdS As Holes Provider for Visible Light-Induced Urea Photo-Oxidation – R. Zhao and J. Radich (Auburn University)
- 09:40 Break
- 10:00 2101 Doping Engineering in Type-II Homojuention to Enhance the Photoelectrochemical Performance of Thin-Film BiVO₄ Photoanode – J. H. Baek, J. M. Lee, and H. S. Jung (Sungkyunkwan University)

10:20 2102 Crystal Quality and Photoelectrochemical Response of Bismuth Containing Cu₂ZnSnS₄ (CZTS) Absorber Layers for Photovoltaic Applications – B. Unveroglu and G. Zangari (University of Virginia)

10:40 2103 Speciation and Electronic Structure of La_{1-x}Sr_xCoO_{3-Δ} during Oxygen Evolution – K. A. Stoerzinger (Pacific Northwest National Laboratory, Massachusetts Institute of Technology), X. R. Wang (Nanyang Technological University, Massachusetts Institute of Technology), J. Hwang, R. R. Rao, W. T. Hong, and Y. Shao-Horn (Massachusetts Institute of Technology)

11:00 2104 Effect of Ti Doping on the Photoelectrochemical Water Splitting Efficiency of WO₃ Photoanode – S. S. Kalanur and H. Seo (Ajou University)

11:20 2105 Colloidal Ternary Ni_{1-x}Co_xSe Alloy Nanocrystals with tunable compositions: Synthesis, Characterization and Electrocatalytic properties for the Oxygen Evolution Reaction – L. Manna, M. Wang, D. Shinde, and L. De Trizio (Italian Institute of Technology)

Physical and Analytical General Session 2 – 14:00 – 16:40

Co-Chairs: Martin Edwin McBriarty and Robbyn K. Anand

- 14:00 2106 Determination of Effective Surface Area and Reaction Rate Constant By Cyclic Voltammetry Considering Ohmic Resistance and CPE Effects – P. Charoen-amornkitt, T. Suzuki (Osaka University), and S. Tsushima (JST-PRESTO)
- 14:20 2107 Simulations and Experiments of the Kinetics of the Electrochemical Double Layer in Ionic Liquids – C. B. Uzundal, P. Aydogan-Gokturk, S. Suzer, and B. Ulgut (Bilkent University)
- 14:40 2108 Quantum-Chemical Investigation of Molecular Structure and Thermodynamic Properties of Spiropyran Molecules – D. N. Govorov, L. S. Kudin, and A. M. Dunaev (Ivanovo State University of Chemistry and Technology)
- 15:00 2109 Water Structure and Dynamics at Hematite Electrodes – M. E. McBriarty (Pacific Northwest National Laboratory), J. E. Stubbs (GSECARS, University of Chicago), G. F. von Rudorff, J. Blumberger (University College London), E. J. Bylaska (Pacific Northwest National Laboratory), P. J. Eng (GSECARS, University of Chicago), and K. M. Rosso (Pacific Northwest National Laboratory)
- 15:20 2110 Understanding the Stability and Surface Restructuring of Platinum in an Electrochemical Environment – I. T. McCrum (Leiden University), M. A. Hickner, M. J. Janik (The Pennsylvania State University), and M. T. M. Koper (Leiden University)
- 15:40 2111 Mechanistic Insights into Furfural Reduction on Transition Metals Electrodes from First-Principles Methods – N. Shan (Kansas State University), M. K. Hanchett (University of Rochester), and B. Liu (Kansas State University)
- 16:00 2112 Novel Electrochemical Cell Favorable for the Kinetic Studies of Highly Active Enzymes – M. Fadel (Aix-Marseille University)
- 16:20 2113 Extracting Kinetic Information from Bipolar Electrochemistry – R. K. Anand, K. L. Rahn, K. L. Knoche, J. S. Borchers, and O. L. Riusech (Iowa State University)

Electrocatalysis 9: Symposium in Honor of Radoslav Adzic

Physical and Analytical Electrochemistry / Electrodeposition / Energy Technology
Room 603, Washington State Convention Center

General Electrocatalysis 1 – 08:00 – 12:00**Co-Chairs: Minhua Shao and Nenad M. Markovic**

- 08:00 Welcoming Remarks
08:20 **2161** (*Keynote*) Past, Present and Future of Electrochemistry – P. P. Lopes, D. Strmcnik, V. Stamenkovic, and N. M. Markovic (Argonne National Laboratory)
09:00 **2162** (*Invited*) Finite Size Effects – a Guiding Principle in Monolayer Catalyst Design and Synthesis – S. Brankovic (University of Houston)
09:20 **2163** (*Invited*) Use of ALD by SLRR for the Growth of Layered Bi-Metallic Structures and Alloy Thin Films with Specific Functionality – N. Dimitrov (Department of Chemistry, Binghamton University, SUNY)
09:40 Break
10:00 **2164** (*Keynote*) Theoretical Inspirations from Radoslav Adzic's Electrocatalysis Work – M. Mavrikakis, A. O. Elnabawy (University of Wisconsin - Madison), L. T. Roling (Iowa State University), and J. A. Herron (University of Wisconsin - Madison)
10:40 **2165** (*Invite*) Cobalt Platinum Bronze As a Versatile Electrocatalyst – Y. Kamitaka and Y. Morimoto (Toyota Central R&D Labs., Inc.)
11:00 **2166** (*Invite*) Prospective Investigations of Tungsten and Molybdenum Carbide-Containing Materials As Catalysts for Electrochemical Energy Conversion Processes: Proton, Oxygen, and CO/CO₂ Reduction Reaction – J. L. Bott-Neto (Instituto de Química de São Carlos - USP), A. Koverga (Universidad Nacional de Colombia), A. M. Gomez-Marin (Instituto de Química de São Carlos - USP), L. Dorkis (Universidad Nacional de Colombia), E. F. Yopez (Universidad de Medellín), and E. A. Ticianelli (Instituto de Química de São Carlos - USP)
11:20 **2167** (*Invite*) Insights in Measuring Particle Size of Multiatomic Nanoparticles By XAS – N. Marinkovic (Columbia University), K. Sasaki, and R. R. Adzic (Chemistry Department, Brookhaven National Laboratory)
11:40 **2168** Interfacial Electrochemistry of Chemically Modified Electrode Materials, Relevant for Energy Conversion and Storage Systems – D. Strmcnik (Argonne National Laboratory), B. Genorio (University of Ljubljana), N. Danilovic (Lawrence Berkeley National Laboratory), M. Zorko, P. F. B. D. Martins (Argonne National Laboratory), P. P. Lopes (Argonne National Laboratory), V. Stamenkovic, and N. M. Markovic (Argonne National Laboratory)

Core-shell – 14:00 – 16:00**Co-Chairs: Miomir B. Vukmirovic and Viola Birss**

- 14:00 **2169** (*Invite*) Non-Noble Metal Cored Pt-Skin Catalyst and Its Highly Enhanced Stability in Oxygen Reduction Reaction By Controlling the Nitriding Level for the Core – E. Lee (Korea Institute of Energy Research), K. H. Kim (Korea Institute of Energy Research, Chungnam National University), S. D. Yim (Korea Institute of Energy Research (KIER)), S. H. Park (Korea Institute of Energy Research), and G. G. Park (Korea Institute of Energy Research (KIER), University of Science and Technology (UST))
14:20 **2170** (*Invited*) Development and Application of Core-Shell Cathode Catalysts in PEM Fuel Cell – L. Yang, D. Banham, M. Markiewicz, S. Knights, and S. Ye (Ballard Power Systems)
14:40 **2171** (*Invited*) Enhanced Oxygen Reduction Reaction Activity on Pt-Monolayer-Shell PdIr/Ni-Core Catalyst – L. Song, M. B. Vukmirovic, and R. R. Adzic (Chemistry Department, Brookhaven National Laboratory)
15:00 **2172** (*Invited*) Electrochemical Methods for Surface Composition Determination of Alloy and Core/Shell Nanoparticles – E. N. El Sawy (University of Calgary, The American University in Cairo), A. Hoang, J. Slaby (University of Calgary), and V. Birss (Department of Chemistry, University of Calgary)
15:20 **2173** (*Invited*) MEA Studies of Transition Metal Nitride Core-Pt Shell Materials for Fuel Cell Applications – Y. Cai (Global Fuel Cell Business, General Motors), K. Sasaki (Chemistry Department, Brookhaven National Laboratory), A. Kongkanand (Global Fuel Cell Business, General Motors), and R. R. Adzic (Chemistry Department, Brookhaven National Laboratory)
15:40 **2174** Highly Dispersed Carbon Supported PdNi Core with Pt Monolayer Shell Electrocatalysts for Oxygen Reduction Reaction – C. Okoli (Stony Brook University), K. A. Kuttiyiel, K. Sasaki (Chemistry Department, Brookhaven National Laboratory), D. Su (Brookhaven National Laboratory), D. Mahajan (Stony Brook University), and R. R. Adzic (Chemistry Department, Brookhaven National Laboratory)

Charge Transfer: Electrons, Protons, and Other Ions 3

Physical and Analytical Electrochemistry / Energy Technology
Room 617, Washington State Convention Center

Charge Transfer: Electrons 1 – 08:20 – 10:00**Co-Chair: Stephen J. Paddison**

- 08:20 **2267** (*Invited*) First-Principles Design of Mixed Proton-Electron Conductors for Solid-Oxide Fuel Cell Electrodes – M. Pavone (University of Naples Federico II)
09:00 **2268** Mapping Charge Carrier Dynamics of Photoactive Material Surfaces in Space and Time – O. Mohammed (KAUST)
09:20 **2269** Size-Dependent Electrochemistry of Silicon and Gallium Phosphide Ultramicroelectrodes – M. Lancaster, S. Acharya, and S. Maldonado (University of Michigan)
09:40 Break

Charge Transfer: Electrons 2 – 10:00 – 12:40**Co-Chair: Vito Di Noto**

- 10:00 2270 Adiabatic and Nonadiabatic Charge Transport in Li-S Batteries – H. Park (University of Michigan), N. Kumar (Sandia National Laboratories), M. Melander (University of Jyväskylä, Technical University of Denmark), T. Vegge, J. M. Garcia Lastra, and D. J. Siegel (Technical University of Denmark)
- 10:20 2271 *(Invited)* Multiscale Morphological and Electrical Characterization of Charge Transport and Charge Transfer Limitations to Power Performance of Positive Electrode for Li-Ion Batteries – N. Besnard, P. Tran-Van (Renault Research Department), A. Etienne (Institut Jean Lamour), E. Maire, T. Douillard (Laboratoire MATEIS, INSA-Lyon), O. Dubrunfaut (Laboratoire de Génie Electrique de Paris, SUPELEC), L. Gautier (Umicore Rechargeable Battery Materials), S. Franger (ICMMO-ERIEE, UMR CNRS-UPS 8182, Université Paris Sud), J. C. Badot (Institut de Recherche de Chimie Paris), and B. Lestriez (IMN, CNRS/University of Nantes)
- 11:00 2272 Charge-Transfer Perturbations Due to Interfaces on Electronic and Ionic Conductions within Composite Electrodes for Li-Ion Batteries – J. C. Badot (Institut de Recherche de Chimie Paris - CNRS -), O. Dubrunfaut (Laboratoire de Génie Electrique de Paris, SUPELEC), and B. Lestriez (IMN, CNRS/University of Nantes)
- 11:20 2273 *(Invited)* Observation of the Marcus Inverted Region of Electron Transfer from Asymmetric Chemical Doping of Pristine (n,m) Single-Walled Carbon Nanotubes – Y. Kunai, A. T. Liu, A. Cottrill, V. Koman, P. Liu, D. Kozawa, X. Gong, and M. S. Strano (MIT)
- 12:00 2274 Homogeneous and Heterogeneous Catalysis in the All-Vanadium Redox Flow Battery – M. V. Holland-Cunz, J. Friedl, and U. Stimming (Newcastle University)
- 12:20 2275 Charge Transport through Single Molecules Connected to Semiconductor Electrodes – R. J. Nichols (The University of Liverpool), A. Vezzoli (The University of Liverpool), W. Schwarzacher (University of Bristol), N. Ferri, S. J. Higgins (The University of Liverpool), and R. Brooke (University of Bristol)

Charge Transfer: Li and Other Ions 1 – 14:00 – 15:40**Co-Chair: Stephen J. Paddison**

- 14:00 2276 *(Invited)* Towards Comprehensive Control of Electrochemical Reactions through Electrolyte Design: A Lithium Oxygen Battery Case Study – G. Leverick, M. Tulodziecki, Y. Katayama, R. Tatara (Massachusetts Institute of Technology), S. Feng (ChemE/Massachusetts Institute of Technology), F. Bardé (Toyota Motor Europe), and Y. Shao-Horn (Massachusetts Institute of Technology)
- 14:40 2277 Transport & Charge Transfer Near Electrochemical Interfaces: A Quasi-Fermi Perspective – K. N. Grew (U.S. Army Research Laboratory)
- 15:00 2278 *(Invited)* Computational Insights to the Charge Transfer Reaction at the Complex Li/SEI/Electrolyte Interface – Y. Qi and Y. Li (Michigan State University)

Ballroom 6ABC, Washington State Convention Center**L04 Poster Session – 18:00 – 20:00**

- 2279 Hybrid Energy Conversion and Storage (HECS) Cells of the Composite Materials between Visible-Light Active $\text{Co}(\text{OH})_2$ and UV-Light Active $\text{Ni}(\text{OH})_2$ – M. Sawangphruk, K. Kongsawatvoragul, and S. Kalasina (Vidyasirimedhi Institute of Science and Technology)
- 2280 Ion Migration in Organometal Trihalide Perovskite Solar Cells – S. Lee and O. Ilhwan (Kumoh National Institute of Technology)
- 2281 Morphological and Electrochemical Optimization of Solid Oxide Fuel Cell (SOFC) Diffusion-Blocking Layer and Cathode Layer Fabricated by Reactive Spray Deposition Technology (RSDT) – T. A. Ebaugh (University of Connecticut), J. Barton (FuelCell Energy, Inc.), L. J. Bonville, and R. Maric (Center for Clean Energy Engineering)
- 2282 Performance of Metal-Supported Proton-Conducting Solid Oxide Fuel Cells By Reactive Spray Deposition Technology – R. J. Ouimet (University of Connecticut, Center for Clean Energy Engineering), T. D. Myles (Center for Clean Energy Engineering, University of Connecticut), L. J. Bonville (Center for Clean Energy Engineering), and R. Maric (Center for Clean Energy Engineering, University of Connecticut)
- 2283 Transmembrane Electric Conductivity Modulation in PCBM Doped Free-Standing Lipid Bilayers By Visible Light Irradiation – K. Kanomata, T. Haseyama (Yamagata University), T. Deguchi (Tohoku Univ), D. Tadaki, T. Ma (RIEC, Tohoku University), A. Hirano-Iwata (Tohoku Univ), and F. Hirose (Yamagata University)

L05**Oxygen Reduction Reactions****Physical and Analytical Electrochemistry / Energy Technology
Room 602, Washington State Convention Center****Oxygen Reduction Reactions 1 – 08:00 – 10:00****Co-Chairs: Pawel J. Kulesza, Vito Di Noto, and Iwona Agnieszka Rutkowska**

- 08:00 2297 *(Invited)* Single Metal Atom Embedded in Two Dimensional Supports for Active Oxygen Reduction Reaction – S. Back (Stanford University), S. Siahrostami (Department of Chemical Engineering, Stanford University), and J. Nørskov (Stanford University)
- 08:30 2298 *(Invited)* Tailored ORR Electrocatalysts – N. Becknell (Argonne National Laboratory), P. P. Lopes (Argonne National Laboratory), H. Lv, E. Coleman, D. Li, R. Wang, D. Strmcnik, N. M. Markovic, and V. Stamenkovic (Argonne National Laboratory)
- 09:00 2299 *(Invited)* Electrocatalytic Activity Towards ORR and Stability of Binary and Ternary Catalysts Based on Pt and Cu – C. Coutanceau (Université de Poitiers, IC2MP, UMR CNRS 7285), S. Lankiang (University of Poitiers), and S. Baranton (Université de Poitiers, IC2MP, UMR CNRS 7285)
- 09:30 Break

Monday, May 14

Oxygen Reduction Reactions 2 – 10:00 – 12:00**Co-Chairs: Vito Di Noto, Christophe Coutanceau, and Robert A. Mantz**

- 10:00 2300 *(Invited)* Graphene: A Promising Catalyst Support for Oxygen Reduction Reaction in Polymer Electrolyte Membrane Fuel Cells – B. Yarar Kaplan, E. Jamil, S. Ghobadi, N. Haghmoradi, S. Abdolhosseinzadeh, M. F. Jamil, E. Biçer (Sabanci University), E. Daş (Atatürk University), A. Bayrakçeken Yurtcan (Ataturk University), and S. Alkan Gürsel (Sabanci University)
- 10:30 2301 *(Invited)* Recent Advances in Electrocatalysis of Oxygen Reduction Using Metallo-Corroles – A. Friedman (Bar Ilan University), N. Levy, and L. Elbaz (Bar-Ilan University)
- 11:00 2302 Reduced-Graphene-Oxide-Based Hybrid Supports for Platinum Catalysts Active at Low Loadings during Oxygen Reduction – P. J. Kulesza, B. Dembinska, S. Zoladek, I. A. Rutkowska, K. Miecznikowski, A. Jablonska, L. Stobinski, J. Zak (University of Warsaw), E. Negro (Dept. of Industrial Engineering, University of Padova), and V. Di Noto (Dept. Industrial Engineering, University of Padova)
- 11:20 2303 Challenges and Perspectives in Applying First-Principles Calculations for the Design of PGM-Free Catalyst for Oxygen Reduction Reaction – I. Matanovic (Center for Micro-Engineered Materials, University of New Mexico), K. Artyushkova (University of New Mexico, Center for Micro-Engineered Materials), and P. Atanassov (Center for Micro-Engineered Materials, University of New Mexico)
- 11:40 2304 Deciphering the Oxygen Reduction Reaction on Platinum: A Theoretical Framework – J. Huang (Central South University), J. Zhang (Tsinghua University, Dept. Automotive Engineering), and M. H. Eikerling (Simon Fraser University, Dept. Chemistry)

Oxygen Reduction Reactions 3 – 14:00 – 15:50**Co-Chairs: Lior Elbaz and Pawel J. Kulesza**

- 14:00 2305 *(Invited)* Highly Active and Durable Pt-Based Catalysts for the Oxygen Reduction Reaction in PEFCs – H. Uchida (Clean Energy Research Center, University of Yamanashi, Fuel Cell Nanomaterials Center, University of Yamanashi), H. Yano (Fuel Cell Nanomaterials Center, University of Yamanashi), J. Inukai (Clean Energy Research Center, University of Yamanashi), and A. Iiyama (Fuel Cell Nanomaterials Center, University of Yamanashi)
- 14:30 2306 The Use of Temperature-Programmed Desorption to Explain the Electrochemical Behaviour of PGM-Free PEFC Cathode Catalysts – P. Boldrin, D. Malko (Imperial College London), N. P. Brandon (Quantitative Imaging Division, IQM Elements), and A. R. J. Kucernak (Imperial College London)

- 14:50 2307 Electrocatalytic Oxygen Reduction Reaction Activity of Sodium Metal Phosphate Based Insertion Cathodes – S. Baskar (Indian Institute of Science), C. Murugesan (Indian Institute of Science, Bangalore, 560012, India), R. Gond (Indian Institute of Science, Bangalore), K. Sada (Indian Institute of Science, Bangalore, 560012, India), D. Dwibedi, and P. Barpanda (Indian Institute of Science, Bangalore)
- 15:10 2308 Novel Fe-N/C Type Catalysts Based on Carbide Derived Carbon for Oxygen Reduction Reaction – R. Jäger, P. E. Kasatkin, P. Teppor (Institute of Chemistry, University of Tartu), E. Härk (Helmholtz-Zentrum Berlin), U. Joost (Institute of Physics, University of Tartu), T. Romann, I. Tallo, R. Kanarbik (Institute of Chemistry, University of Tartu), P. Paiste, K. Kirsimäe (University of Tartu), and E. Lust (Institute of Chemistry, University of Tartu)
- 15:30 2309 Highly-Acidic Mixed-Metal-Oxides (WO₃-ZrO₂) As Active Supports for Dispersed Metal Centers: Enhancement of Electrocatalytic Reduction of Oxygen and Carbon Dioxide – I. A. Rutkowska, S. Zoladek, and P. J. Kulesza (University of Warsaw)

LOG**Nanoporous Materials****Physical and Analytical Electrochemistry / Energy Technology
Room 615, Washington State Convention Center****Nanoporous Metals – 08:00 – 10:00****Co-Chair: Anne C. Co**

- 08:00 2364 *(Invited)* Nanoporous Materials for Energy and Environmental Applications – M. Chen (Johns Hopkins University)
- 08:40 2365 Conversion Reaction Synthesis: A Versatile Route to Nanoporous Transition Metals – C. Coaty, H. Zhou, H. Liu, and P. Liu (University of California, San Diego)
- 09:00 2366 Hierarchical Nanoporous Gold with Engineered Architectures *Via* Dealloying of 3D Printed Alloys – Z. Qi, C. Zhu, W. Chen, E. B. Duoss, J. Ye, M. A. Worsley, C. M. Spadaccini, and J. Biener (Lawrence Livermore National Laboratory)
- 09:20 2367 3D Noble Metal-Based Porous Materials Self-Assembled By Atomically Modified Building Blocks As Electrocatalysts Boosting Small Molecule Electro-Oxidation or Reduction – Q. Shi (Washington State University), C. Zhu (The School of Mechanical and Materials Engineering, WSU), D. Du, and Y. Lin (Washington State University)
- 09:40 Break

Metal Organic Frameworks – 10:00 – 12:00**Co-Chair: Roseanne Warren**

- 10:00 2368 *(Invited)* Functional Metal-Organic Frameworks: From Design to Implementation – O. K. Farha (King Abdulaziz University)
- 10:40 2369 Metal-Organic Frameworks with Open Metal Sites for Sensing, Catalysis, and Energy Storage – M. D. Allendorf (Sandia National Laboratories, Livermore, CA 94551-0969), V. Stavila (Sandia National Laboratories), A. A. Talin (Sandia National Labs), A. M. Ullman, and T. C. Wang (Sandia National Laboratories)

- 11:00 2370 Functionalizable Nanoporous Two-Dimensional Covalent Organic Frameworks – B. A. Parkinson (University of Wyoming)
- 11:20 2371 *(Invited)* Microscopy and Spectroscopy on Thin-Films for (Electro-)Catalysis – G. Delen, L. D. B. Mandemaker, D. Fu, J. H. J. Wijten, and B. M. Weckhuysen (Utrecht University)

Nanoporous Membranes, Transport Properties, and Fundamental Studies – 13:00 – 16:00

Co-Chairs: Iryna V. Zenyuk and Kunal Karan

- 13:00 2372 *(Invited)* Nanoporous Membranes By Self-Assembly of “Hairy” Nanoparticles – I. Zharov (University of Utah)
- 13:40 2373 Flexible Ceramic Membranes for Redox Flow Batteries – G. M. Newbloom (Membrion, Inc.)
- 14:00 2374 *(Invited)* Recent Advances in the Textural Characterization of Hierarchically Structured Nanoporous Materials – M. Thommes and K. Cychosz (Quantachrome Instruments)
- 14:40 2375 Optimising Catalyst Design for Hydrogen Fuel Cells through Structure to Performance Correlations – B. D. Gates, M. T. Y. Paul, J. Eastcott, and A. K. Taylor (Simon Fraser University)
- 15:00 2376 Atomic Layer Deposition Nanoelectrode Array As a Platform for Ion Transport Studies – I. V. Zenyuk and D. C. Sabarirajan (Tufts University)
- 15:20 2377 *(Invited)* Light Metal Hydride Nanocomposites As Room Temperature Solid Electrolytes – P. E. de Jongh, P. Ngene (Utrecht University), and D. Blanchard (Technical University of Denmark)

Ballroom 6ABC, Washington State Convention Center

L06 Poster Session – 18:00 – 20:00

- 2378 A Way to New Smart Materials – Hierarchical 3D Structures Produced Via Self-Organization of Nanowires – G. Strukova (Independent scientist)
- 2379 A Cathodic Electro-Fenton Catalyst Derived from Ionic-Liquid: Peroxide Generation and Di-Valent Iron Regeneration – Y. J. Ko, H. G. Kim (Korea Institute of Science and Technology), J. W. Choi (Korea Institute of Science and Technology, KIST school, Korea University of Science and Technology), W. S. Lee (Korea Institute of Science and Technology), and S. W. Hong (Korea Institute of Science and Technology, KIST school, Korea University of Science and Technology)
- 2380 General Synthesis of Three-Dimensionally Ordered Macro-/Mesoporous Materials and Their Electrocatalytic Applications – L. Xu, T. Sun, and J. Chen (Beijing University of Chemical Technology)
- 2381 Polyelectrolyte Modification of Nanoporous Membranes for Selective Ion Transport in Electrodialysis – S. Percival, L. J. Small, S. Rempe, and E. D. Spoeerke (Sandia National Laboratories)
- 2382 Enhanced Capacitive Deionization of Graphene Nanoplatelet/Activated Carbon Composite Electrode – K. Ham (ERTL, Gwangju Institute of Science and Technology (GIST)), J. K. Lee, and J. Lee (Ertl Center for Electrochemistry & Catalysis, GIST)

- 2402 Influence of Oxygen and Chlorine on the Electrical Performance of ZnO Field-Effect Transistors – H. von Seggern and P. Mundt (Technische Universität Darmstadt)
- 2383 Electrical Double Layer Capacitance of Ultra-Microporous Carbon Synthesized Using Zeolite Template – T. Lee (Institute for Basic Science (IBS), Korea Advanced Institute of Science and Technology), S. H. Ko (Institute for Basic Science (IBS)), and R. Ryoo (Korea Advanced Institute of Science and Technology, Institute for Basic Science (IBS))

MO2 Microfluidics, Sensors, and Devices 2
Sensor / Nanocarbons
Room 310, Washington State Convention Center

Microfluidics, Sensors and Devices 1 – 08:10 – 11:50

Co-Chairs: Jessica E. Koehne and Praveen K. Sekhar

- 08:10 Welcoming Remarks
- 08:15 2473 *(Keynote)* Recent Progress in Nanomaterials and Smart-Phone Based Biosensors for Biomedical, Environmental, and Food Safety Applications – D. Du and Y. Lin (Washington State University)
- 08:55 2474 Bacteriophage-Assisted Magnetic Separation and Electrochemical Detection of Pathogenic Bacteria from Food Matrix – A. Ghuman (School of Chemical, Materials and Biomedical Engineering, Nano Electrochemistry Laboratory, University of Georgia), Y. Zhou (Nano Electrochemistry Laboratory, Department of Chemistry, University of Georgia), and R. P. Ramasamy (School of Chemical, Materials and Biomedical Engineering, University of Georgia, 30602)
- 09:15 2475 Electrodeposition of Both Carbon Nanotube and Glucose Oxidase on Pt Electrode Using a Dispersed Electrolytic Solution – M. Yasuzawa, M. Uchimaru (Tokushima University), H. P. Jhong (Tokushima University, National Taiwan University of Science and Technology), M. Kurashina (Tokushima University), C. H. Wang (National Taiwan University of Science and Technology), Y. Fuchiwaki (Health Research Institute, AIST), and T. Harada (Kondo Chemical Industry)
- 09:35 2476 Suspended Graphene-Based Electrochemical Sensor for Ultra-Sensitive Detection of Electroactive Dopamine (neurotransmitter) Signals – R. Kumar, C. Dang, F. Hadi, O. Dawood, J. Sexton, M. Missous, D. Jackson, R. Young (University of Manchester), J. E. Koehne (NASA-Ames Research Center, Ca, USA), S. Boulton, N. Dixon, and M. Migliorato (University of Manchester)
- 09:55 Break
- 10:10 2477 High Throughput Droplet Microfluidic Platform for Single-Cell Lipid Analysis of Human Breast Cancer Cell Lines – R. E. Fernandez, M. M. Monshi, P. Bhushan, and S. Bhansali (Florida International University)
- 10:30 2478 *(Keynote)* New Microfluidic Platforms for Medical Screening and Diagnostics – B. L. Gray (Simon Fraser University)

- 11:10 **2479** Time-of-Flow Micromechanical Mass Spectrometry and Micromechanical Infrared Spectroscopy Using Microfluidic Cantilever – T. Thundat, R. Abraham, F. Khan (University of Alberta), S. Kim, and J. Lee (Sogang University, Seoul Korea)
- 11:30 **2480** Physical Properties of Carbon Fiber Doped Micropatternable Nanocomposite Polymer – M. N. I. Shiblee, S. Shah (Yamagata University), P. K. Sekhar (Washington State University, Vancouver), T. Thundat (University of Alberta), L. A. Nagahara (NIH NCI), M. Kawakami, H. Furukawa, and A. Khosla (Yamagata University)

Microfluidics, Sensors and Devices 2 – 13:25 – 16:20

Co-Chairs: Ajit Khosla and Peter Hesketh

- 13:25 **2481** (Invited) Microfluidic Chips with Electronic Cell Tracking for Digital Biomedical Assays – A. F. Sarioglu (Georgia Institute of Technology)
- 13:55 **2482** 3D Printed Wearable Glucose Sensors – Y. Song, S. Nesaei, D. Du, A. Gozen, and Y. Lin (Washington State University)
- 14:15 **2483** 3D Printing of Molds for Soft Lithography – S. Shah, M. N. I. Shiblee, H. Furukawa, M. Kawakami (Yamagata University), L. A. Nagahara (NIH NCI), T. Thundat (University of Alberta), P. K. Sekhar (Washington State University, Vancouver), and A. Khosla (Yamagata University)
- 14:35 Break
- 14:50 **2484** (Invited) Dielectrophoretic Capture and Detection of Microbial Pathogens Using Nanoelectrode Arrays – J. Li (Kansas State University)
- 15:20 **2485** Selective Detection of a Protein Biomarker Utilizing a Large Area CVD-Grown Graphene-Based Field Effect Transistor – S. Ghosh, N. I. Khan, and E. Song (University of New Hampshire)
- 15:40 **2486** In-Situ Electrical Characterization of Low Temperature Getter Thin Films Activation – S. Lemette, C. Bessouet, P. Coste, A. Bosseboeuf, and J. Moulin (C2N, CNRS / Univ. Paris Sud / Univ. Paris Saclay)
- 16:00 **2487** Structural and Electrical Characteristics of Oxygen Annealed ALD-ZrO₂/SiO₂ Gate Stack for Advanced CMOS Devices – R. Gupta and R. Vaid (University of Jammu)

TUESDAY, MAY 15

Highlights

- 0955h..... Henry B. Linford Award for Distinguished Teaching – *Rm 604, WSCC*
- 1200h..... Annual Society Business Meeting and Luncheon – *Grand Ballroom B, Sheraton*
- 1400h..... Technical Exhibit opens, Career Expo and Resume Review – *Ballroom 6ABC, WSCC*
- 1530h..... Networking Break – *Ballroom 6ABC, WSCC*
- 1800h..... Technical Exhibit, General and Student Poster Session – *Ballroom 6ABC, WSCC*

A01

**Battery and Energy Technology
Joint General Session**

Battery / Energy Technology
Room 607, Washington State Convention Center

Battery Performance and Safety – 08:00 – 12:00

Co-Chairs: Loraine Torres-Castro and Mohan Karulkar

- 08:00 **117** Investigations of the Structural and Electrochemical Properties of Overcharged Li-Ion Batteries – L. Torres-Castro, J. Lamb, L. A. M. Steele, and G. Quintana (Sandia National Laboratories)
- 08:20 **118** Degradation of Separator after Calendar Ageing in 18650 Li-Ion Battery: Impact on Safety and Performances – X. Fleury (CEA, LITEN, F-38054 Grenoble, France, Univ. Grenoble Alpes, LEPMI, F-38000 Grenoble, France), S. Geniès (CEA, LITEN, F-38054 Grenoble, France), and P. X. Thivel (Univ. Grenoble Alpes, LEPMI, F-38000 Grenoble, France)
- 08:40 **119** Dynamic Pulse Charging Scheme for Series Connected Cells – J. F. Stephens (FAMU-FSU College of Engineering), P. L. Moss (Florida A&M University - Florida State University), L. Morris Jr. (Department of Electrical and Computer Engineering), and M. H. Weatherspoon (Florida A&M University - Florida State University)
- 09:00 **120** Conversion Reaction: TEM and EELS Investigation of MnO Reactivity to Electron at Different Charging State – C. Davoisne (LRCS - CNRS UMR 7314, Université de Picardie Jules Verne, CNRS RS2E FR3459), I. Jimenez-Gordon (Technocentre Renault, LRCS UMR CNRS 7314), S. Grugeon (CNRS RS2E FR3459, LRCS - CNRS UMR 7314, Université de Picardie Jules Verne), and S. Laruelle (LRCS - CNRS UMR 7314, Université de Picardie Jules Verne, CNRS RS2E FR3459)

- 09:20 **121** The Implications of Fast Charge in Lithium Ion Battery Performance and Life: Cell vs. Pack – T. R. Tanim, M. G. Shirk, R. L. Bewley, E. J. Dufek (Idaho National Laboratory), and B. Y. Liaw (Idaho National Laboratory)
- 09:40 **122** High Precision Characterization of Lithium Plating and Abuse Response during Extreme Fast Charge (XFC) of Lithium Ion Batteries – M. Karulkar, L. A. M. Steele, J. Lamb, C. J. Orendorff, and L. Torres-Castro (Sandia National Laboratories)
- 10:00 **123** Effect of Formation Cycling Schemes on Li-Ion Cell Capacity – M. Rashid (The University of Warwick), A. McGordon (University of Warwick), L. Somerville (Jaguar Land Rover), and W. D. Widanage (University of Warwick)
- 10:20 **124** High Energy/Power Density, Safe Lithium Battery with Nonflammable Electrolyte – W. Xing (ADA Technologies, Inc.)
- 10:40 **125** Understanding the Ionic Behavior of Silylamine-Type Reversible Ionic Liquids for Use As a Battery Safety Switch – J. Chen, S. Jung, R. J. Messinger, and E. J. Biddinger (The City College of New York, CUNY)
- 11:00 **126** Numerical Investigation of Thermal Management for Lithium-Ion Battery Pack Under Thermal Abuse Condition – Q. Li, C. Yang, S. Santhanagopalan (National Renewable Energy Laboratory), J. Lamb, L. A. M. Steele, and L. Torres-Castro (Sandia National Laboratories)
- 11:20 **127** Prediction Prognosis for State of Charge, State of Health, and Remaining Useful Life for a Lfp Battery Management System (BMS) – L. Morris Jr. (Department of Electrical and Computer Engineering) and M. H. Weatherspoon (Florida A&M University - Florida State University)
- 15:20 **133** All-Solid-State “Lithium-Free” Microbatteries Characterization By Electrochemical Impedance Spectroscopy Coupled With X-Ray Photoelectron Spectrometry – F. F. Ferreira Gomes (STMICROELECTRONICS, Institut de Chimie Moléculaire et des Matériaux d’Orsay), S. Franger (ICMMO-ERIEE, UMR CNRS-UPS 8182, Université Paris Sud), and D. Guy-Bouyssou (ST Microelectronics)
- 15:40 **134** Effective Transport Property Simulation on Three-Phase Mesoscale Electrode Reconstructions across Manufacturing Parameters – B. L. Trembacki, D. R. Noble, M. E. Ferraro, V. E. Brunini, and S. A. Roberts (Sandia National Laboratories)
- 16:00 **135** Advances and Application of Conformal Mesoscale Modeling to Battery Electrodes – S. A. Roberts, B. L. Trembacki, M. E. Ferraro (Sandia National Laboratories), A. N. Mistry (Purdue University), V. E. Brunini (Sandia National Laboratories), P. P. Mukherjee (Purdue University), and D. R. Noble (Sandia National Laboratories)
- 16:20 **136** In Situ Battery Spectroscopy: A Novel Approach to Investigate Unmodified Working Batteries – E. G. Sorte (Sandia National Lab (for US DOE)), Y. J. Tong (Department of Chemistry, Georgetown University), and T. M. Alam (Sandia National Lab (for US DOE))
- 16:40 **137** In Situ Investigation of Morphological Changes in Discharging Alkaline Zinc-Manganese Dioxide Batteries By Transmission X-Ray Microscopy – A. Raj (MAE/ACEE Princeton University), A. Kim (Princeton University), J. H. Park, and D. A. Steingart (MAE/ACEE Princeton University)
- 17:00 **138** Studying Break-in Phenomena in Lithium-Ion Batteries through Acoustic and Impedance Measurements – T. Hodson, K. W. Knehr (Princeton University), and D. A. Steingart (MAE/ACEE Princeton University)
- 17:20 **139** Surface Contamination of Metal Oxide-Based Battery Active Materials: Performance Implications and Mitigation Strategies – M. Metzger, J. Sicklinger, D. Pritzl, H. Beyer, and H. A. Gasteiger (Technical University of Munich)
- 17:40 **140** In-Operando Surface Chemistry of Nickel and Copper Current Collectors During Zinc Electro-Deposition and Dissolution – D. Turney (City University of New York), J. W. Gallaway, G. G. Yadav (CUNY Energy Institute at the City College of New York), M. D’Ambrose (Chemical Engineering, The City College of New York), S. Banerjee, J. Huang, and S. Kolhekar (CUNY Energy Institute at the City College of New York)

Lithium Battery - Characterization Techniques – 14:00 – 18:00

Co-Chairs: Hee Jung Chang and Eric Glenn Sorte

- 14:00 **129** NMR Characterization of the Na⁺ Ion Transport in Mixed Ionic Liquids Electrolytes – S. Suarez (Department of Physics, Brooklyn College, CUNY, CUNY Graduate School), L. Gomes Chagas (Helmholtz Institute Ulm, Karlsruhe Institute of Technology), and S. Passerini (Karlsruhe Institute of Technology, Helmholtz Institute Ulm (HIU-KIT))
- 14:20 **130** Multifunctional Energy Storage Composites: Analysis and Optimization of Current Density Distribution – P. Ladpli and F. K. Chang (Stanford University)
- 14:40 **131** In Operando Cell Diagnostics with MRI – M. Mohammadi, A. Ilott, E. Silletta (New York University), M. J. Ganter, C. Schauerman (Rochester Institute of Technology), and A. Jerschow (New York University)
- 15:00 **132** Analysis of Temperature Gradients in Lithium-Ion Batteries By Electrothermal Impedance Spectroscopy (ETIS) – M. Dippon, A. Weber, and E. Ivers-Tiffée (IAM-WET, Karlsruhe Institute of Technology (KIT))

A02

Large-Scale Energy Storage 9

Electronics and Photonics / Battery / Industrial Electrochemistry and Electrochemical Engineering
Room 604, Washington State Convention Center

Systems and Other Issues – 08:00 – 09:55

Co-Chairs: Jean St-Pierre and Jay Whitacre

- 08:00 **179** Redox Flow Batteries for Fast EV Charging and for Hydrogen Production for FCEVs – H. H. Girault (EPFL), C. R. Dennison, Y. Ligen, H. Vrabel, E. Zanzola, D. Reynard, V. Amstutz (EPFL Valais), and P. Peljo (Ecole Polytechnique Federale de Lausanne)

08:20	180	Combined Theoretical and Experimental Approach to Next Generation Flow Cell Charge Carriers for Grid Scale Energy Storage – T. Chu and B. L. Davis (Los Alamos National Laboratory)	14:00	190	Multi-Scale Modeling for Redox Flow Battery Electrode – W. Wang and J. Bao (Pacific Northwest National Laboratory)
08:40	181	Heat to H ₂ – E. S. Skilbred, K. W. Krakhella, I. J. M. Haga, M. Hillestad (Norwegian University of science and technology), G. D. A. Serrano (SINTEF Energy Research), J. G. Pharoah (Queen's University), and O. S. Burheim (Norwegian University of Science and Technology)	14:20	191	Comparison Study of Different Types of Porous Electrodes in Redox Flow Batteries – X. Zhou, Q. Wu, Y. Lv, L. Lin, and X. Li (Shenzhen University)
09:00	182	A Yolk/Shell Strategy for Improvement in Thermal Conductivities in Microencapsulated Phase Change Materials – F. J. Chung, Y. L. Chueh (Department of Materials Science and Engineering, NTHU), M. C. Lu (Department of Mechanical Engineering, NCTU), and T. H. Hsu (Department of MSE, NTHU, Hsinchu, Taiwan)	14:40	192	Optimally Engineered Flow-Through Electrodes Using Automatic Design Algorithms and Additive Manufacturing – V. A. Beck, T. H. Weisgraber, A. N. Ivanovskaya, S. Chandrasekaran, B. D. Moran, S. E. Watts (Lawrence Livermore National Laboratory), D. A. Tortorelli (Lawrence Livermore National Laboratory, University of Illinois), E. B. Duoss, J. Biener, M. Stadermann, and M. A. Worsley (Lawrence Livermore National Laboratory)
09:20	183	Combined Economic and Experimental Evaluation of Energy Storage for Grid Applications – D. M. Davies, M. Verde, O. Mnyshenko, Y. R. Chen, R. Rajeev, S. Meng, and G. Elliott (UC - San Diego)	15:00	193	Some New Territories of Topochemistry for Electrodes in Sustainable Batteries – X. Ji, X. Wu, S. Dong, Z. Li, I. A. Rodríguez Pérez, X. Wang, Z. Jian (Oregon State University), J. Lu (Argonne National Laboratory), and P. A. Greaney (University of California Riverside)
09:40		Break	15:20		Break
Henry B. Linford Award for Distinguished Teaching Address – 09:55 – 10:40 Co-Chair: Trung Van Nguyen			15:40	194	Characterization of Carbon Materials and Electrolytes for Redox Flow Battery By Potential-Sweep Coulometry – A. Ohira, A. Negishi, E. Hozomi, and Y. Sato (National Institute of Advanced Industrial Sci. Technol.)
09:55		Introductory Remarks	16:00	195	Probing the Size-Exclusion Properties of Redox Flow Battery Separator Membranes Using Metal-Ligand Complexes – D. I. Kushner, M. C. Tucker, A. Kusoglu, and A. Z. Weber (Lawrence Berkeley National Laboratory)
10:00	184	(<i>Henry B. Linford Award for Distinguished Teaching Address</i>) Mathematical Modeling of Batteries – R. E. White (University of South Carolina)	16:20	196	A Mechanistic Investigation of Crossover-Induced Capacity Fade in Redox Flow Batteries with Non-Selective Separators – V. P. Nemani and K. C. Smith (University of Illinois at Urbana-Champaign)
Aqueous Systems 1 – 10:40 – 12:00 Co-Chairs: Jay Whitacre and Claire Xiong			16:40	197	Water Transfer across Nafion Membranes Under the Influence of Concentration Gradients in Vanadium Flow Batteries – C. Lenihan, D. Oboroceanu, N. Quill, D. Ní Eidhin (Department of Physics, University of Limerick), D. N. Buckley, and R. P. Lynch (Department of Physics, University of Limerick, Dept. of Chem. Eng., Case Western Reserve University)
10:40	185	High Performance Reversible Hydrogen-Vanadium Fuel Cell for Electrical Energy Storage – T. V. Nguyen and A. Verma (The University of Kansas)	17:00	198	Effect of Membrane Pretreatment on the Mass Transport of Vanadium Redox Flow Batteries – G. A. Goenaga (University of Tennessee-Knoxville), N. M. Cantillo (The University of Tennessee - Knoxville), C. M. Weiss, C. A. Neal, K. M. Grady, M. E. Nyhus (The University of Tennessee-Knoxville), J. Peng (University of Tennessee-Knoxville), and T. A. Zawodzinski Jr. (Oak Ridge National Laboratory, University of Tennessee-Knoxville)
11:00	186	Free-Standing Hollow Electrospun Carbon Nanofiber Web As High-Performance Electrode for Vanadium Redox Flow Batteries – L. Zeng (Department of Mechanical and Aerospace Engineering HKUST, Institute for Advanced Study HKUST), H. Jiang, Y. Ren, J. Xu, and T. Zhao (The Hong Kong University of Science and Technology)	17:20	199	Strategies to Enhance the Performance of Polybenzimidazole Membrane Based Vanadium Redox Flow Batteries – S. Maurya, E. J. Park, Y. S. Kim, and R. Mukundan (Los Alamos National Laboratory)
11:20	187	A Novel Room-Temperature Activated Graphite Felt As the High-Performance Electrode for Vanadium Redox Flow Batteries – H. Jiang, Y. Ren, M. Wu, L. Zeng, J. Xu, W. Shyy, and T. Zhao (The Hong Kong University of Science and Technology)			
11:40	188	Probing the Effects of Various Electrocatalysts on Aqueous Vanadium Redox Flow Battery Performance – A. Shah, M. Pierson, and Y. L. Joo (Cornell University)			
Electrodes/Membranes – 13:40 – 17:40 Co-Chairs: Adam Z. Weber and Jean St-Pierre					
13:40	189	Measuring Redox Flow Battery Kinetics on Single Carbon Fibres – L. H. Landon-Lane, A. Downard (University of Canterbury), W. van Haren (Hogeschool Utrecht), and A. T. Marshall (University of Canterbury)			

A02 Poster Session – 18:00 – 20:00

Co-Chair: Adam Z. Weber

- **200** Improving Electrochemical Performance of The Layer-Structured Ncm Cathode Materials For Large-Scale Lithium Ion Batteries – H. S. Kim (KERI), S. Sim (Korea Electrotechnology Research Institute), and B. S. Jin (KERI)
- **201** Diagnosis of a Commercial LI ION Batteries – H. Gualous and A. EL Mejdoubi (Université de Caen Normandie)
- **202** Energy Systems, Thermodynamic, and Financial Analysis of Low Temperature, Proton-Conducting Electrochemical Hydrogen Compressors (EHCs) for Distributed Energy Storage – W. G. Colella (Gaia Energy Research Institute LLC) and M. Hamdan (Giner ELX, Inc.)
- **203** Two Electron Viologen Anolyte Materials for Neutral Aqueous Organic Redox Flow Batteries – C. DeBruler, B. Hu, J. Luo, and L. Liu (Utah State University)
- **204** Electrochemical Properties of Lithium Based Liquid Metal Battery with Tin-Bismuth Cathode Materials – J. S. Yeo, J. Lee, E. J. Yoo, and I. Seo (Agency for Defense Development)
- **205** Enhanced Electrochemical Properties of Lithium-Bismuth Liquid Metal Battery Via the Introduction of Tellurium Cathode Materials – J. Lee, J. S. Yeo, E. J. Yoo, and I. Seo (Agency for Defense Development)
- **206** Reaction Mechanisms for Long Life and Ultra-High Power Rechargeable Zn Ion Batteries – Y. Li, S. Wang (University of Washington), J. R. Salvador (General Motors), J. Wu (Lawrence Berkeley National Laboratory, Stanford University), B. Liu (Shanghai University), W. Yang (Lawrence Berkeley National Laboratory), J. Yang (Shanghai University), W. Zhang (Southern University of Science and Technology), and J. Yang (University of Washington)
- **207** Advanced Bi-Additive Vanadium Electrolyte – Z. Nie (Pacific Northwest National Laboratory), W. Wang (Joint Center for Energy Storage Research (JCESR)), V. Murugesan, X. Wei (Joint Center for Energy Storage Research), B. Li (Pacific Northwest National Laboratory), J. Liu (Joint Center for Energy Storage Research (JCESR)), and V. Sprenkle (Pacific Northwest National Laboratory)
- **208** Synthesis of Few Layered MnO₂ Nanosheets Encapsulated TiO₂ Nanorods Electrode for Supercapacitor Application – R. Rajagopal (University of Ulsan) and K. S. Ryu (Department of Chemistry, University of Ulsan)
- **209** Electrochemical Assessment of Molten NaI-AlCl₃ Catholytes for Sodium Batteries – S. Percival, L. J. Small, E. Allcorn, and E. D. Spoeke (Sandia National Laboratories)
- **210** A “Non Zebra-Type” Sodium Metal Rechargeable Batteries with Low Materials Cost and High Performances – H. J. Chang, X. Lu, J. F. Bonnett, V. Sprenkle, and G. Li (Pacific Northwest National Laboratory)

- **211** Strategies for Improved Depth-of-Discharge of Zinc-Air Flow Batteries – F. Mahlendorf, D. Fuchs, C. Müller, A. Heinzel (University of Duisburg-Essen, LET), T. Heinemeyer, C. Schwarz, A. Schneider, and P. Behrens (Gottfried Wilhelm Leibniz Universität Hannover)
- **212** Highly Ion Selective Membranes for Aqueous Redox Flow Batteries – M. Gigli, B. Mecheri, M. Branchi, A. C. Tizzoni, S. Licoccia, and A. D’Epifanio (University of Rome Tor Vergata, Italy)
- **213** Nafion-Based Composite Membranes Containing Sulfonated Hypercrosslinked Polystyrene Nanoparticles for Quinone-Bromine Redox Flow Batteries – M. Gigli, B. Mecheri, V. C. A. Ficca, A. C. Tizzoni, S. Licoccia, and A. D’Epifanio (University of Rome Tor Vergata, Italy)
- **214** Electrochemical and EPR Measurements of Vanadium Redox Couples for All Vanadium Redox Flow Batteries – S. Tiano, T. M. Arruda (Salve Regina University), and J. S. Lawton (University of Massachusetts Dartmouth)
- **215** Understanding the Effects of Sulfate/Bisulfate Ions on Electrolytes for Vanadium/Sulfuric Acid Redox Flow Batteries – D. J. Donnelly, E. McDonnell (Salve Regina University), J. S. Lawton (University of Massachusetts Dartmouth), and T. M. Arruda (Salve Regina University)

A03**Li-ion Batteries and Beyond**

Battery / Physical and Analytical Electrochemistry

Room 609, Washington State Convention Center

Sodium-Ion Cathode 1 – 08:00 – 12:00

Co-Chairs: David Mitlin and Arthur V. Cresce

- 08:00 **381** In-Situ STM Studies on Li- and Na-Intercalation Batteries – L. Seidl, O. Schneider (Technische Universität München), and U. Stimming (Newcastle University, Technische Universität München)
- 08:20 **382** Structural Investigation of P3-Type Na_{0.67}Mn_{0.67}Ni_{0.33}O₂ Cathode Material By X-Ray Diffraction and X-Ray Absorption Spectroscopy – L. Zhang (Helmholtz-Zentrum Berlin für Materialien und Energie), J. Li (Helmholtz-Institute Muenster), J. Li (MEET Battery Research Center, University of Muenster), G. Schumacher (Helmholtz-Zentrum Berlin für Materialien und Energie), and J. Banhart (Technische Universität Berlin)
- 08:40 **383** Potassium Intercalation into Sodium Metal Oxide and Polyanionic Hosts: Few Case Studies – K. Sada (Indian Institute of Science, Bangalore, 560012, India), L. Sharma, S. Baskar (Indian Institute of Science), and P. Barpanda (Indian Institute of Science, Bangalore)
- 09:00 **384** A Novel Na_mMO₂ (M = transition metal) Cathode Material for Sodium-Ion Batteries: Insight from the Synergetic Effect of Multi-Metal Substitution – J. Li, X. He (Helmholtz-Institute Muenster), J. Wang, and J. Li (MEET Battery Research Center, University of Muenster)

09:20	385	Design of New Cathode Materials for K-Ion Batteries – H. Kim, J. C. Kim (Lawrence Berkeley National Laboratory), D. H. Seo (University of California, Berkeley), S. H. Bo (Lawrence Berkeley National Laboratory), and G. Ceder (University of California, Berkeley)	08:40	373	Structural Evolution and Electrochemical Properties of O3-Type Layered Oxide with a Quaternary Transition Metal Composition – J. C. Kim (Lawrence Berkeley National Laboratory), D. H. Kwon, T. Shi, J. Wang (University of California, Berkeley), H. Kim (Lawrence Berkeley National Laboratory), M. Bianchini (University of California, Berkeley), and G. Ceder (University of California, Berkeley, Lawrence Berkeley National Laboratory)
09:40		Break			
10:00	386	Selenium Impregnated Monolithic Carbons as Free-Standing Cathodes for High Volumetric Energy Lithium and Sodium Metal Batteries – D. Mitlin (Clarkson University) and J. Ding (Binghamton University)	09:00	374	Strategies to Stabilize the Cathode/Electrolyte Interface in Ni-Rich NMC Based Li-Ion Batteries – W. Zhao (College of Energy, Xiamen University, Pacific Northwest National Laboratory), J. Zheng, L. Zou (Pacific Northwest National Laboratory), R. L. Patel (Pacific Northwest National Laboratory), X. Wang, X. Liang (Missouri University of Science and Technology), C. Wang (Pacific Northwest National Laboratory), Y. Yang (Xiamen University), and J. G. Zhang (Joint Center for Energy Storage Research (JCESR))
10:20	387	Fundamental Investigations into Na ⁺ Behavior in Aqueous and Non-Aqueous Electrolytes – A. V. Cresce, O. Borodin (U.S. Army Research Laboratory), R. Rogers (Rochester Institute of Technology), and K. Xu (Army Research Laboratory)	09:20	375	Correlating the Effects of Processing Conditions to Cation Mixing and Performance of an NMC 111 Cathode Material for Lithium Ion Batteries – B. D. Gates (Simon Fraser University), J. Ovens (Simon Fraser University, Nano One Materials Corp.), A. K. Taylor (Simon Fraser University), Y. Feng, M. Talebi-Esfandarani, and S. Campbell (Nano One Materials Corp.)
10:40	388	One Step Soft-Chemical Approach Towards the Synthesis of Na ₃ V ₂ O ₂ (PO ₄) ₂ f and Its Electrochemical Properties in Na- and Li-Ion Batteries – S. Manna (Missouri University of Science and Technology), P. Sandineni (Missouri University of Science & Technology), and A. Choudhury (Missouri University of Science and Technology)	09:40		Break
11:00	389	Development of a Novel Cathode Material Na ₂ Fe _{1.96} V _{0.96} (PO ₄) ₃ with High Power and Long Cyclability for Na-Ion Batteries – J. Kim (Sejong University)	10:00	376	Transition-Metal Migration upon Cycling in a Lithium-Rich Layered Oxide – A Long-Duration Synchrotron in Situ Study – M. Piana (Technical University of Munich), K. Kleiner (Diamond Light Source, Didcot, UK), B. Strehle, I. Buchberger, F. Friedrich (Technical University of Munich), A. R. Baker, S. J. Day, C. C. Tang (Diamond Light Source, Didcot, UK), and H. A. Gasteiger (Technical University of Munich)
11:20	390	High-Performance P2-Type Na _{0.67} Fe _{0.15} Mn _{0.6} Ni _{0.2} Al _{0.05} O ₂ Cathode Material for Na-Ion Batteries – Y. Tang, M. Zhou, K. Wang, and K. Jiang (Huazhong University of Science and Technology)	10:20	377	Quantification and Prediction of NMC Defect Concentrations – L. Yin, G. Mattei, Z. Li (Department of Chemistry, Stony Brook University, Chemistry Division, Brookhaven National Laboratory), and P. Khalifah (Chemistry Division, Brookhaven National Laboratory, Department of Chemistry, Stony Brook University)
11:40	391	Investigation of the Na-M-O Phase Diagram and Preparation of Related High-Voltage P2 Cathodes for Na-Ion Batteries – M. Bianchini (University of California, Berkeley, Lawrence Berkeley National Laboratory), J. Wang, R. J. Clément (UC Berkeley, Lawrence Berkeley National Lab), and G. Ceder (University of California, Berkeley, Lawrence Berkeley National Laboratory)	10:40	378	A Novel High-Voltage Binder for High-Capacity Cathode of Lithium-Ion Batteries – H. Q. Pham (Chungnam National University, Republic of Korea), G. Kim, H. M. Jung (Kumoh National Institute of Technology, Republic of Korea), and S. W. Song (Chungnam National University, Republic of Korea)
Room 608, Washington State Convention Center					
Lithium-Ion Cathode 3 – 08:00 – 12:00					
Co-Chairs: Seung-Wan Song and Binghong Han					
08:00	371	Toward Greener Lithium-Ion Batteries: Aqueous Binder-Based LiNi _{0.4} Co _{0.2} Mn _{0.4} O ₂ Cathode Material with Superior Electrochemical Performance – Z. Chen (Nanyang Technological University), G. T. Kim (Karlsruhe Institute of Technology), D. Chao (NANYANG TECHNOLOGICAL UNIVERSITY), M. Copley (Johnson Matthey), S. Passerini (Helmholtz Institute Ulm (HIU-KIT)), and Z. Shen (NANYANG TECHNOLOGICAL UNIVERSITY)	11:00	379	(Invited) Charge Compensation By Cationic/Anionic Redox for High-Capacity Positive Electrode Materials – N. Yabuuchi (ESICB-Kyoto University, Tokyo Denki University)
08:20	372	Chromium Doped Li ₂ RuO ₃ As a Positive Electrode with Superior Electrochemical Performance for Lithium Ion Batteries – Y. Yang (Nanjing Tech University)	11:40	380	Orthotellurate Cathode Frameworks for Potassium-Ion Battery – T. Masese (Research Institute of Electrochemical Energy, AIST), K. Yoshii (Research Institute of Electrochemical energy, AIST), T. Okumura (AIST), H. Senoh, and M. Shikano (Research Institute of Electrochemical Energy, AIST)

Sodium-Ion Cathode 2 – 14:00 – 18:00**Co-Chair: David Reber**

- 14:00 **403** High Performance Electrolyte Using Mixture of Ionic Liquid – Solvent for Sodium Batteries – P. M. L. Le (VNU-HCM University of Science), B. T. Tran, T. D. Vo, and L. T. M. Le (VNU-HCM - APCLab)
- 14:20 **404** A High-Voltage Aqueous Electrolyte for Sodium-Ion Batteries – D. Reber (Empa - Swiss Federal Laboratories for Materials Science, EPFL - École Polytechnique Fédérale de Lausanne), R. S. Kühnel, and C. Battaglia (Empa - Swiss Federal Laboratories for Materials Science)
- 14:40 **405** Preparation of Disordered Carbon Anode By Mechanical Method for Sodium Ion Battery – S. C. Lee (School of Mechanical Engineering, Yonsei University, Korea Institute of Science and Technology), K. Y. Chung (KIST School-Korea University of Science and Technology, Korea Institute of Science and Technology), and S. C. Jun (School of Mechanical Engineering, Yonsei University)
- 15:00 **406** Atomistic Simulations on the High Rate Sodium Storage Mechanisms in Non-Graphitic Carbons – E. Paek and S. Park (Clarkson University)
- 15:20 **407** Improvement of the Electrochemical Performance of P2-Na_{0.7}MnO₂ Composite By Ni Doping – A. Konarov, J. U. Choi, and S. T. Myung (Sejong University)
- 15:40 Break
- 16:00 **408** Surface Modification of Mg-Doped P2-Type Na_{2/3}Mn_{0.65}Ni_{0.2}Co_{0.15}O₂ Cathode Materials for Sodium-Ion Batteries – Y. Wen and S. G. Sun (Department of Chemistry, Xiamen University)
- 16:20 **409** Exploration of Iron-Based Mixed Polyanion Cathode Materials for Thin Film Sodium-Ion Batteries – S. Baskar (Indian Institute of Science), R. Angalakuthi (Indian Institute of Science, Bangalore), C. Murugesan (Indian Institute of Science, Bangalore, 560012, India), and P. Barpanda (Indian Institute of Science, Bangalore)
- 16:40 **410** Metal Doped Ammonium Vanadium Oxide Cathode with Exceptionally Discharge Capacity for Sodium-Ion Battery Fabrication – A. Sarkar (Indian Institute of Technology, Bombay) and S. Mitra (Indian Institute of Technology Bombay)
- 17:00 **411** Na-Ion Full Cell: Electrochemical Study Using Prussian Blue Cathode and Tin Sulphide (SnS) Anode with Additive-Free Ether-Based Electrolyte System – P. K. Dutta and S. Mitra (Indian Institute of Technology Bombay)
- 17:20 **412** Amorphous Tin Oxide Nanohelix Structures As an Anode for Highly Efficient Na-Ion Batteries – I. Y. Choi, C. Jo, B. G. Chae, C. G. Park, W. Choi, J. Lee, and J. K. Kim (Pohang University of Science and Technology (POSTECH))
- 17:40 **413** Sodiation Behaviors of 1D Van Der Waals Sb₂S₃ Nanorods By in-Situ TEM and DFT Calculations – S. Yao, J. Cui, and J. K. Kim (Hong Kong University of Science and Technology)

Lithium-Ion Anode 1 – 14:00 – 18:00**Co-Chairs: Leif Nyholm and Thierry Djenizian**

- 14:00 **392** Lithium Trapping in Alloy Forming Electrodes and Current Collectors for Lithium Based Batteries – D. Rehnlund, F. Lindgren (Department of Chemistry - Ångström, Uppsala University), J. Pettersson (Department of Chemistry - BMC, Uppsala University), K. Edström, and L. Nyholm (Department of Chemistry - Ångström, Uppsala University)
- 14:20 **393** Mechanically Milled Si-Mn-Fe Alloys as Negative Electrodes for Li-Ion Batteries – Y. Cao, B. Scott, R. A. Dunlap, and M. N. Obrovac (Dalhousie University)
- 14:40 **394** Electrolytes for Safe and Stable Cycling of 4-V Class Lithium Metal Batteries – S. Chen, J. Zheng, L. Yu, X. Ren, J. Liu, W. Xu, and J. G. Zhang (Pacific Northwest National Laboratory)
- 15:00 **395** Surface Layer Effects Synergism with Electrolytes for Li Nucleation and Growth – J. A. Lochala, B. Wu (University of Arkansas), T. Tarverne (SUNY Polytechnic Institute), and J. Xiao (Pacific Northwest National Laboratory)
- 15:20 **396** Electrochemical Alloying and Supercritical Fluid-Based Synthesis of Antimony Conversion Electrodes with Controlled Anisotropy – G. A. Williamson (University of Washington), E. P. Pandres (Chemical Engineering/University of Washington), and V. C. Holmberg (University of Washington)
- 15:40 Break
- 16:00 **397** Synthesis and Electrochemical Properties of Nb₂O₅-Ge/GeO₂ Core-Shell Structure for Reversible Lithium Storage – K. Kim and J. H. Kim (Kookmin University)
- 16:20 **398** Elucidating Electrodeposition Mechanisms in Li-Ion Battery Anodes – F. Hao and P. P. Mukherjee (Purdue University)
- 16:40 **399** Niobium Alloying of Self-Organized TiO₂ Nanotubes As an Anode for Lithium-Ion Micro Batteries – T. Djenizian (Ecole Nationale Supérieure des Mines de Saint-Etienne), T. Cottineau, V. Keller (University of Strasbourg), G. Salian, and C. Lebouin (University of Aix-Marseille)
- 17:00 **400** Tailoring the Kinetics of Sn Anodes for High Power Energy Storage Devices – J. Cui, S. Yao, and J. K. Kim (Hong Kong University of Science and Technology)
- 17:20 **401** Unraveling the Inner-Workings of Lithium Transition Metal Oxyfluorides Using DFT-Based Cluster Expansion Method – J. H. Chang, S. Loftager, J. M. Garcia Lastra, and T. Vegge (Technical University of Denmark)
- 17:40 **402** Impedance Analysis of Graphite/Lnmo Cells with a Micro-Reference Electrode: Role of the Graphite Anode – D. Pritzl, J. Landesfeind, S. Solchenbach, and H. A. Gasteiger (Technical University of Munich)

A03 Tuesday Poster Session – 18:00 – 20:00**Co-Chairs: John T. Vaughey and Wesley M. Dose**

- **414** Mixed Organic/Ionic Liquid Electrolytes Compatible with Forcespun Carbon Microfiber Electrodes in Lithium Ion Batteries – M. Alcoutlabi, J. Villarreal (University of Texas Rio Grande Valley), L. Zuniga (The University of Texas Rio Grande Valley), and J. Lopez (UTRGV)
- **415** Manipulating Protein Configuration for High-Performance Solid Polymer Electrolytes – X. Fu, C. Li, Y. Jewel, Y. Wang, J. Liu, and W. Zhong (Washington State University)
- **416** Electrodeposition of Polymer Electrolyte into Carbon Nanotube Anodes for High Performance Flexible Li-Ion Microbatteries – V. A. Sugiawati (Aix-Marseille University), F. Vacandio (MADIREL), Y. Ein-Eli (Technion - Israel Institute of Technology), P. Knauth (MADIREL), and T. Djenizian (Ecole Nationale Supérieure des Mines de Saint-Etienne)
- **417** Solid Electrolyte Interface Formation on a Thin Film Electrode: An *in Situ* Neutron Reflectometry Study – E. D. Rus and J. A. Dura (NIST Center for Neutron Research)
- **418** Separator-Free Gel Electrolytes Based on Water-in-Salt Solutions – A. V. Cresce (U.S. Army Research Laboratory), N. T. Eidson (University of Maryland, College Park, US Army Research Laboratory), C. Yang (University of Maryland), F. Wang (U.S. Army Research Lab), C. Wang (University of Maryland, College Park), and K. Xu (Army Research Laboratory)
- **420** In-Situ Synthesis of Carbon-Coated Porous Silicon for Li-Ion Batteries Via Inorganic CO₂ Reduction Route with Magnesium Silicide – Y. Cha, P. Dong, X. Zhang, and M. K. Song (Washington State University)
- **421** Free-Standing Binder-Free Multi-Wall Carbon Nanotube/Silicon Anodes for Lithium-Ion Batteries – S. Luanwuthi, V. Babenko, A. Naylor, M. Roberts, J. Hong, J. Kasemchainan, P. G. Bruce, and N. Grobert (University of Oxford)
- **422** Core-Shell Structured SiO_x-TiO₂@C Nanocomposites As High-Rate and Long-Cycle Anode for Lithium Ion Batteries – Z. Li, H. Zhao, and P. Lv (University of Science and Technology Beijing)
- **423** High-Capacity Silicon-Carbon Anodes Enabled By Dispersing Nano Silicon Onto Natural Graphite for Lithium Ion Batteries – C. E. Wu and N. L. Wu (National Taiwan University)
- **424** Design and Novel Synthesis of Tailored Si@Void@C Nanostructures with Long Cycle Life for Next-Generation Li-Ion Batteries – Q. He, M. Ashuri (Wanger Institute for Sustainable Energy Research, Illinois Institute of Technology), and L. Shaw (Illinois Institute of Technology, Wanger Institute for Sustainable Energy Research)
- **425** Graphene Modified Feof Nano-Structured Hybrid As High-Specific-Energy Cathode Materials for Li-Ion Batteries – Y. Liu (Indiana University Purdue University Indianapolis), F. Yang (Indiana University-Purdue University Indianapolis), K. Yu (The University of Texas at Austin, International Iberian Nanotechnology Laboratory), Y. Ren, C. Sun (Argonne National Laboratory), Y. Liu (Center for Nanoscale Materials), P. J. Ferreira (The University of Texas at Austin, International Iberian Nanotechnology Laboratory), and J. Xie (Indiana University Purdue University Indianapolis)
- **426** *In Situ* Mass Spectrometry Studies of Gas Evolution Reactions During Cell Cycling in Aqueous Lithium Ion Batteries – J. Uddin, D. Addison (Liox Power, Inc.), C. Wang (University of Maryland, College Park), and K. Xu (Army Research Laboratory)
- **427** Enhanced Performance of Lithium-Ion Batteries By Conductive ALD Thin Film Coating – X. Liang and Y. Gao (Missouri University of Science and Technology)
- **428** Improvement of Nickel-Rich Lithium Transition-Metal Oxide By Surface Modifications – Y. H. Son (Samsung Advanced Institute of Technology), S. G. Hong (Samsung Electronics), and B. Yu (Platform material Iteam, SDI)
- **429** *Operando* X-Ray Diffraction and EIS on NCA Battery Cathodes – D. Passarello, C. J. Takacs, H. G. Steinrueck, and M. F. Toney (SLAC National Accelerator Laboratory)
- **430** Experimental Research of Mechanical Properties and Interfacial Peeling Strength for Graphite Electrode – C. Liu (Shanghai Institute of Applied Mathematics and Mechanics), J. Feng (Shanghai University, Department of Mechanics), Z. Guo (shanghai University), and B. Lu (Shanghai Institute of Applied Mathematics and Mechanics)
- **431** Anatase TiO₂ Nanoparticles Supported By Cu/Ni Micro-Channeled Current Collector as a Novel Electrode for Lithium-Ion Batteries – Y. Yue and H. Liang (Texas A&M University)
- **432** Cracks and Dendrites in Solid Electrolyte Interphases in Lithium-Ion Nanobatteries: Molecular Dynamics Simulations – J. M. Seminario, D. E. Galvez-Aranda, and L. Selis (Texas A&M University)
- **433** Electrostatic Spray Deposited Sn-SnO₂-CNF Composite Anodes for Lithium Ion Storage – A. Rabiei Baboukani, E. Adelowo, R. Agrawal, I. Khakpour, V. Drozd, W. Li, and C. Wang (Florida International University)
- **434** Reversible Lithium Management for Near Zero Volt Storage Tolerance in Lithium Ion Batteries – K. R. Crompton (NSWC Crane Division), M. Hladky, J. Staub, and B. J. Landi (Rochester Institute of Technology)
- **435** Development of Long Life and Low Cost Li-Rich Layered Oxide Positive Active Material for xEVs – K. Inoue, S. Yamate (GS Yuasa International Ltd.), J. Y. Shin (BASF Japan Ltd.), J. Haag (BASF Corporation), D. Nishikawa, and T. Inoue (BASF TODA battery Materials LLC.)
- **436** Nano-Confined Sulfur/CNT Composite As Cathode for Li-S Batteries – G. Lee and Y. Hao (California Polytechnic State University)

- 437 Protein-Based Biomaterial Enhances Lithium Ion Battery Performance – M. Yuan and H. Ardebili (University of Houston)
- 438 Composite Graphene/Blended Polymer of PEO/PVDF-HFP As Solid Polymer Electrolyte for Sodium Batteries – P. M. L. Le, T. D. Vo, N. H. Do, H. T. T. Nguyen (VNU-HCM - APCLab), T. M. Phung, and T. V. Man (VNU-HCM-APCLab)
- 439 Electrochemical and Microstructural Analysis of Cu₆Sn₅ Alloy Electrodes – D. Juarez-Robles (Purdue University), H. J. Gonzalez-Malabet, L. Ausderau (University of Alabama in Huntsville), X. Xiao (Argonne National Laboratory), G. J. Nelson (University of Alabama in Huntsville), and P. P. Mukherjee (Purdue University)
- 440 Black TiO_{2-x} Coated Graphite Anode Materials with Fast Charging Capability for Lithium-Ion Battery – D. S. Kim, Y. E. Kim, D. G. Lee (Hanyang University), G. Jeong (Korea Electronics Technology Institute), and H. Kim (Hanyang University)
- 441 Ultrathin Sheets of MoS₂/g-C₃N₄ composite As a Hosting Material of Sulphur for Lithium-Sulphur Batteries with Long Cycle Life and High Rate Capability – S. Majumder (Hong Kong University of Science and Technology), M. Shao, and G. Chen (The Hong Kong University of Science and Technology)
- 656 Carbon Nanotube Microparticles for Lithium-Sulfur Battery Cathodes – D. Gueon and J. H. Moon (Sogang University)
- 657 DI Water Dispersed Graphene Oxide and Supercapacitors with Photoreduced Graphene Oxide Films – J. H. Sul, I. G. Kim, S. H. Kang, and I. K. You (Electronics and Telecommunications Research Institute)
- 658 Lithium-Ion Capacitors Based on Reduced Graphene Oxide/Carbon Nanotube Thin Films Fabricated By Electrostatic Spray Deposition – E. Adelowo, A. Rabiei Baboukani, and C. Wang (Florida International University)
- 659 Improvement of ORR Catalyst Layer with Highly Graphitized CNF in PEMFC – S. Chung (Electrochemical Reaction & Technology Laboratory, GIST), J. K. Lee (Ertl Center for Electrochemistry & Catalysis, GIST), and J. Lee (Ertl Center for Electrochemistry & Catalysis, GIST, Electrochemical Reaction & Technology Laboratory, GIST)
- 660 Photodynamics at the Heterojunction between Semiconducting Single-Walled Carbon Nanotubes and Perylene Diimide Electron Acceptors – H. S. Kang (National Renewable Energy Laboratory), T. J. Sisto, S. Peurifoy, B. Zhang (Columbia University), A. J. Ferguson (National Renewable Energy Laboratory), C. Nuckolls (Columbia University), and J. L. Blackburn (National Renewable Energy Laboratory)
- 661 Tunable Surface Modification of Mesoporous Carbon Nanoparticles for Polysulfide Trapping in Lithium-Sulfur Batteries – I. A. Murphy, Y. Li, S. H. Jang, J. Yang, and A. Jen (University of Washington)
- 662 Nitrogen Doped Graphene-Carbon Nanotubes and Nitrogen Doped Nano-Onion Hybrids As High-Performance Catalysts for Oxygen Reduction Reaction – E. Y. Choi (Chung-Aung University), M. H. Kim, and C. K. Kim (Chung-Ang University)
- 663 Nitrogen/Phosphorus Co-Doped Side-Hole-Rich Carbon Nanotubes As Efficient Metal-Free Catalysts for Oxygen Reduction Reaction – M. H. Kim (Chung-Ang University), E. Y. Choi (Chung-Aung University), and C. K. Kim (Chung-Ang University)

B01

Carbon Nanostructures for Energy Conversion and Storage

Nanocarbons / Physical and Analytical Electrochemistry
Ballroom 6ABC, Washington State Convention Center

B01 Poster Session – 18:00 – 20:00

- 652 Study of Structural Formation of the Carbide Derived Carbon By X-Ray Microtomography and Small-Angle X-Ray Scattering Techniques – E. Härk, A. Petzold, G. Goerigk, S. Risse, M. Ballauff, S. Schneider, A. Hilger, N. Kardjilov (Helmholtz-Zentrum Berlin), I. Tallo, R. Härmas, and E. Lust (Institute of Chemistry, University of Tartu)
- 653 Comparative Study of Edge-Functionalized Graphene Nanoplatelets As Superior Metal-Free Counter Electrodes for Dye-Sensitized Solar Cells – H. K. Kim, C. K. Kim, H. M. Kim, S. H. Kang, Y. K. Eom (Korea University), I. Y. Jeon, and J. B. Baek (UNIST)
- 654 Facile Synthesis of Highly-Graphitic Carbon By the Reaction of Calcium Carbide with Sulfur and the Application in Lithium-Ion Batteries – T. Li (Istituto Italiano di Tecnologia, University of Genova), X. Bai (Istituto Italiano di Tecnologia, Shandong University), U. Gulzar (Istituto Italiano di Tecnologia, University of Genova), and R. P. Zaccaria (Istituto Italiano di Tecnologia, Ningbo Institute of Materials Technology and Engineering)
- 655 Ultra-High Specific Power and Energy of Lithium-Ion Capacitors of the Composite Material between N-Doped Reduced Graphene Oxide (N-rGO) and Carbon Nanotubes (CNTs) – C. Aphirakaramwong, N. Phattharasupakun, and M. Sawangphruk (Vidyasirimedhi Institute of Science and Technology)

B02

Carbon Nanostructures in Medicine and Biology

Nanocarbons / Organic and Biological Electrochemistry / Sensor
Room 203, Washington State Convention Center

Fullerene and Nanodiamond Therapeutic Applications – 08:00 – 09:20
Co-Chairs: Markita P. Landry and Tatiana DaRos

- 08:00 688 (Invited) Antiviral Activity of Self-Assembled Glycodendro[60]Fullerene Monoadducts – N. Martin (Universidad Complutense)
- 08:20 689 (Invited) Assets of Nanodiamonds for Bioapplications – J. C. Arnault (CEA, LIST, Diamond Sensors Laboratory, France)
- 08:40 690 PET Imaging of Tumor Uptake of a Biocompatible C₆₀ Fullerene Drug Delivery Vector – N. G. Zaibaq, M. J. Collins (Rice University), M. D. Pagel (University of Texas MD Anderson Cancer Center), and L. J. Wilson (Rice University Department of Chemistry)

- 09:00 **691** Facial and Controllable Hydrothermal Synthesis of Manganese Doped Carbon Quantum Dots for Targeted Fluorescence and Biomedical Applications – W. M. Girma, J. S. Lin, and J. Y. Chang (National Taiwan University of Science and Technology)

Ballroom 6ABC, Washington State Convention Center

B02 Poster Session – 18:00 – 20:00

- **692** Nanocarbon-Based Field-Effect Transistor Biosensors (bioFETs) for Real-Time Detection of DNA Sequences – C. M. Bazan, M. Sauvage (IRIC, Université de Montréal), E. Huliganga (IRIC, Université de Montréal, Carleton University), A. Bencherif (IRIC, Université de Montréal), G. Borduas (Département de physique, Université de Montréal), and D. Bouilly (IRIC, Université de Montréal)
- **693** Dual Color Bioimaging with Nanocarbon Quantum Dots – M. T. Hasan (Texas Christian University), R. Gonzalez-Rodriguez (Texas Christian University Fort Worth), E. Sizemore, and A. V. Naumov (Texas Christian University)
- **694** Graphene Derivatives As Effective Formulations for Drug Delivery, Imaging, and Sensing – E. Sizemore, M. T. Hasan, G. Akkaraju, and A. V. Naumov (Texas Christian University)

B03 Carbon Nanotubes - From Fundamentals to Devices
Nanocarbons / Physical and Analytical Electrochemistry
Room 205, Washington State Convention Center

Separations – 10:00 – 12:00

Co-Chair: Padma Gopalan

- 10:00 **695** *(Invited)* Molecular Requirement for Compounds Toward Facile Isolation of Adsorbent-Free Semiconducting Single-Walled Carbon Nanotubes Based on Supramolecular Chemistry – F. Toshimitsu (WPI-I2CNER, Kyushu University), A. Staykov (I2CNER, Kyushu University), and N. Nakashima (WPI-I2CNER, Kyushu University)
- 10:20 **696** *(Invited)* New Method Development for Making Structurally Defined DNA-Carbon Nanotube Hybrids – M. Zheng (National Institute of Standards and Technology)
- 10:40 **697** Learning DNA/SWCNT Recognition Sequences – Y. Yang (Lehigh University), M. Zheng (National Institute of Standards and Technology), and A. Jagota (Lehigh University)
- 11:00 **698** *(Invited)* Inner- and Outer-Wall Sorting of Double-Walled Carbon Nanotubes – B. S. Flavel (Karlsruhe Institute of Nanotechnology)
- 11:20 **699** *(Invited)* Systematic Aqueous Two-Phase Separations of Carbon Nanotubes to Investigate the Separation Mechanism – J. Defiliet, M. Martinati, W. Wenseleers, and S. Cambre (University of Antwerp)
- 11:40 **748** *(Invited)* Ultrafast Spectroscopy of Free-Carrier like Dynamics in Heavily Doped Semiconducting Carbon Nanotubes – K. H. Eckstein, M. M. Achsnich, F. Schoeppler (Julius-Maximilian University Wuerzburg), L. Luer (IMDEA), and T. Hertel (Julius-Maximilian University Wuerzburg)

Synthesis – 14:00 – 16:20

Co-Chair: Ming Zheng

- 14:00 **701** *(Keynote)* Carbon Nanotubes: Discovery and Beyond – S. Iijima (Meijo University)
- 14:40 **702** *(Invited)* Digital-Coded Isotope Labeling on Individual Single-Walled Carbon Nanotubes Grown on Crystal Quartz – S. Maruyama, K. Otsuka, S. Yamamoto, B. Koyano, R. Xiang, T. Inoue, and S. Chiashi (The University of Tokyo)
- 15:00 **703** Designing Single-Wall Carbon Nanotube Forest Growth for Nanofluidic Applications – E. Meshot, N. Bui, C. Chen, S. Buchsbaum, K. J. Wu, and F. Fornasiero (Lawrence Livermore National Laboratory)
- 15:20 **704** *(Invited)* Structure Characterization of Intermetallic Compound Catalysts and Single-Walled Carbon Nanotubes – Y. Li, F. Yang, and J. Yang (Peking University)
- 15:40 Break
- 16:00 **705** Nickel Nanoparticles Synthesized Via Novel Alcolgel Electrolysis for the Growth of Multi-Walled Carbon Nanotubes (MWCNTs) By Chemical Vapor Deposition (CVD) Technique – Z. Ali (Pakistan institute of Engineering and Applied sciences)

Devices 1 – 16:20 – 18:00

Co-Chair: Yan Li

- 16:20 **706** *(Invited)* Self-Aligned Short-Channel Heterojunction Diodes and Transistors Based on Carbon Nanotubes and Related Nanoelectronic Materials – M. C. Hersam (Northwestern University)
- 16:40 **707** Confined Shear-Based Alignment of Carbon Nanotubes for Thin Film Transistors – K. R. Jenkins, J. Chan, A. Berson, and M. S. Arnold (University of Wisconsin-Madison)
- 17:00 **708** *(Invited)* Inkjet-Printed Terahertz Detector – F. Léonard (Sandia National Laboratories)
- 17:20 **709** Fullerene-Sensitized Carbon Nanotube Array Phototransistor with Responsivity Exceeding 10⁷ A/W – K. J. Bergemann, F. P. Doty (Sandia National Labs), and F. Léonard (Sandia National Laboratories)
- 17:40 **710** Effect of Organometallic Interconnects on Transverse Conductivity of Aligned Single-Walled Carbon Nanotubes – E. Bekyarova, M. Chen, and W. Li (University of California, Riverside)

Ballroom 6ABC, Washington State Convention Center

B03 Poster Session – 18:00 – 20:00

- **711** Molecular Recognition at Local Doped Sites of Locally Functionalized Single-Walled Carbon Nanotubes for Selective Wavelength Shift of Near Infrared Photoluminescence – T. Shiraki (WPI-I2CNER, Kyushu University, Department of Applied Chemistry, Kyushu University), H. Onitsuka, T. Shiga (Department of Applied Chemistry, Kyushu University), and N. Nakashima (WPI-I2CNER, Kyushu University)
- **712** New Methods Towards Designer DNA Sequences for Enantiomeric-Chiral Selective Sorting of Single-Wall Carbon Nanotubes – B. Meany and M. Zheng (National Institute of Standards and Technology)

International Symposium on Nanomaterials: Focus - Korea

Nanocarbons / Dielectric Science and Technology / Electronics and Photonics / Industrial Electrochemistry and Electrochemical Engineering / Korean Electrochemical Society
Room 205, Washington State Convention Center

Materials for Supercapacitor – 08:00 – 10:00

Co-Chairs: Ho Seok Park and Wonbong Choi

- 08:00 772 (Invited) Fundamental Understanding and Optimal Design of Low-Dimensional Carbon Nanomaterials for Supercapacitors – G. S. Hwang (University of Texas at Austin)
- 08:20 773 (Invited) High Temperature Flexible Supercapacitors – H. S. Park (SungKyunKwan University) and H. H. Rana (Sungkyunkwan University)
- 08:40 774 (Invited) Flexible and Self-Healing Aqueous Supercapacitors By Polyampholyte Gel Electrolytes with Biochar Electrodes and Their Unique Low Temperature Properties – H. J. Chung (University of Alberta)
- 09:00 775 (Invited) Redox-Active Carbon Positive Electrodes for High-Performance Hybrid Supercapacitors – T. Liu, B. Lee, M. J. Lee, and S. W. Lee (Georgia Institute of Technology)
- 09:20 776 (Invited) Advanced Energy Storages Based on Carbon Nanomaterials and 2D Materials – W. Choi (University of North Texas)

Ballroom 6ABC, Washington State Convention Center

B04 Poster Session – 18:00 – 20:00

Co-Chairs: Sang Ouk Kim and Gyeong S. Hwang

- 777 Understanding Catalytic Behavior of Co-Sn Alloy/Graphene Counter Electrode Electrocatalysts in Liquid-Junction Photovoltaic Devices – H. J. Oh, V. D. Dao, and H. S. Choi (Chungnam National University)
- 778 First-Principles Study on the Gase Monolayer As an Anode Material for Alkali Metal Ion Batteries – A. Sannyal and J. Jang (Pusan National University)
- 779 Enhancement of PEC Water Splitting for Self-Carbon Doped TiO₂ Nanorods / Au Nanoparticle / TiO₂ Ternary Structure in All Solution Process – J. Hwang, K. Eom, H. Han, and H. Seo (Ajou University)
- 780 Hybrid Nitrogen-Incorporated Reduced Graphene Oxide-Branched Carbon Nanotubes Architectures for Lithium Ion Battery Anode – H. S. Park (SungKyunKwan University) and Y. Kang (Sungkyunkwan University)
- 781 Three-Dimensional Ordered Nanoporous Nickel Electrode for Oxygen Evolution Reaction: Toward Highly Efficient and Ultra-Stable Water Electrolysis – S. Kim, Y. Cho, and J. H. Park (Yonsei University)
- 782 Cost-Effective Mo Fe Alloy/Reduced Graphene Oxide Counter Electrodes As a New Avenue for High-Efficiency Dye-Sensitized Solar Cells – S. Shin, V. D. Dao, and H. S. Choi (Chungnam National University)
- 783 Multiple-Heterojunction in Single Titanium Dioxide Nanoparticle for Novel Metal-Free Photocatalysis – Y. Cho, S. Kim, and J. H. Park (Yonsei University)

- 784 Highly Conductive and Stable Graphene/PEDOT:PSS Composites As Metal Free Cathodes for Organic Dye-Sensitized Solar Cells – J. C. Kim (Dongguk University), M. J. Ju (UNIST), M. M. Rahman (Konkuk University), K. Yoo, and J. J. Lee (Dongguk University)
- 785 Vertically Oriented MoS₂ with Spatially Controlled Geometry on Nitrogenous Graphene Sheets for High-Performance Sodium-Ion Batteries – J. Y. Jeong and J. H. Park (Yonsei University)

Fullerenes - Endohedral Fullerenes and Molecular Carbon

Nanocarbons

Ballroom 6ABC, Washington State Convention Center

B05 Poster Session – 18:00 – 20:00

Co-Chair: Shangfeng Yang

- 786 Magnetic Property of Metallofullerenes within Metal-Organic Framework – T. Wang (Institute of Chemistry, Chinese Academy of Sciences)
- 787 The First Molecular Dumbbell Consisting of an Endohedral Sc₃n@C₈₀ and an Empty C₆₀-Fullerene Building Block – T. Wei and A. Hirsch (University of Erlangen)
- 788 Actinide Nitride Clusterfullerene: Synthesis, Isolation and Spectroscopic Characterization of U₂N@C₈₀ – X. Li, X. Zhang, and N. Chen (Soochow University)
- 789 Synthesis, Isolation and Characterization of Two Isomers of Dy₂O@C₈₂ – W. Yang, J. Zhuang, Y. Shi, and N. Chen (Soochow University)
- 790 The Dependence of Electrochemical Property on Carbon Cage in Tb₂C₉₀ Isomers – M. Nie, W. Dong, and Y. Lian (Heilongjiang University)

2D Layered Materials from Fundamental Science to Applications

Nanocarbons / Dielectric Science and Technology / Electronics and Photonics / Industrial Electrochemistry and Electrochemical Engineering

Room 201, Washington State Convention Center

Synthesis and Chemistry 1 – 08:00 – 12:00

Co-Chair: Saptarshi Das

- 08:00 837 Suppression of Sulfur Desorption of High-Temperature Sputtered MoS₂ Film By Applying DC Bias – Y. Hibino, S. Ishihara, N. Sawamoto (Meiji University), T. Ohashi, K. Matsuura, H. Wakabayashi (Tokyo Institute of Technology), and A. Ogura (Meiji University)
- 08:20 838 Synthesis of Molybdenum Carbide and Formation of an Epitaxial Mo₂C/MoS₂ Hybrid Structure Via Carburization of Molybdenum Disulfide – J. Jeon (SAINT, Sungkyunkwan University (SKKU)), J. Lee (DGIST), S. Choi (SAINT, Sungkyunkwan University (SKKU)), B. H. Lee (Gwangju Institute of Science and Technology), Y. J. Song (SAINT, Sungkyunkwan University (SKKU)), J. H. Cho (Sungkyunkwan University), Y. H. Jang (DGIST), and S. Lee (SAINT, Sungkyunkwan University (SKKU))

- 08:40 **839** *(Invited)* In Situ scanning Tunneling Microscopy Studies of hBN Layer Growth Kinetics and the Influence of Substrate on Electronic Structure of the Layers – P. Arias (University of California Los Angeles), A. Abdulslam (Colorado School of Mines), A. Ebnonnasir (University of California Los Angeles), C. V. Ciobanu (Colorado School of Mines), and S. Kodambaka (University of California Los Angeles)
- 09:00 **840** *(Invited)* Experimental Synthesis of 2D Borophene – N. P. Guisinger (Argonne National Laboratory)
- 09:20 **841** *(Invited)* Integrated Crystal Growth of 2D Materials – S. Hofmann (Department of Engineering, University of Cambridge)
- 09:40 Break
- 10:00 **842** *(Invited)* Layer-Controlled, Wafer-Scale Fabrication of 2D Semiconductor Materials – D. Chiappe (imec, Belgium), V. Afanasiev (KU Leuven, Belgium), Y. Tomczak, S. Sutar (imec, Belgium), A. Leonhardt (imec, Belgium, KU Leuven, Belgium), J. Ludwig, U. Celano (imec, Belgium), S. Brems (imec vzw), A. Dabral (KU Leuven, Belgium, imec, Belgium), G. Pourtois (University of Antwerp, Belgium, imec, Belgium), M. Caymax, T. Schram, C. Huyghebaert, I. Asselberghs (imec, Belgium), S. De Gendt (KU Leuven, Belgium, imec), and I. Radu (imec, Belgium)
- 10:20 **843** *(Invited)* Large Area Synthesis of 2D Metal Dichalcogenides By Van Der Waals Molecular Beam Epitaxy – A. Dimoulas, D. Tsoutsou, P. Tsipas, S. Fragkos (NCSR-DEMOKRITOS), R. Sant (University Grenoble, Alpes/Neel Institute, CNRS), C. Alvarez, H. Okuno, and G. Renaud (University Grenoble, Alpes/CEA-INAC, Grenoble)
- 10:40 **844** *(Invited)* The Impact of the Phase and Stacking of 2D Materials on Their Properties and Applications – S. Jin (Department of Chemistry, UW-Madison)
- 11:00 **845** *(Invited)* Epitaxy of 2D Transition Metal Dichalcogenide Monolayers and Heterostructures – X. Zhang, T. Choudhury, M. Chubarov, and J. M. Redwing (The Pennsylvania State University)
- 11:20 **846** Synthesis and Transfer of High-Quality Graphene Grown on Al₂O₃(0001)/Pt(111) Template Wafers – K. Verguts (KU Leuven, imec vzw), J. Coroa (imec vzw), L. Peters (KU Leuven, imec vzw), C. H. Wu, C. Huyghebaert, S. Brems (imec vzw), and S. De Gendt (KU Leuven, imec vzw)
- 11:40 **847** *(Invited)* Advances in 2D Materials Production; From R&D to Commercialization – P. Wiper, G. Gonçalves, B. Chen, A. Jouvray, and K. Teo (AIXTRON Ltd)
- 15:40 Break
- 16:00 **851** *(Invited)* Anomalous Corrosion of Bulk 2D Materials Leading to Stable Monolayers – S. Das (Pennsylvania State University)
- 16:20 **852** Black Phosphorus p-Doping By Integration of MoS₂ Nanoparticles – S. Jeon (SAINT, Sungkyunkwan University(SKKU)), M. Kim, J. Jia (SAINT, Sungkyunkwan University (SKKU)), J. H. Park (Sungkyunkwan University), Y. J. Song (SAINT, Sungkyunkwan University (SKKU)), and S. Lee (SAINT, Sungkyunkwan University (SKKU))
- 16:40 **853** Protected Metallic MoS₂ Nanosheets Outlast Pristine Metallic MoS₂ Nanosheets for Hydrogen Evolution Reaction – E. E. Benson, H. Zhang, S. Schuman, S. U. Nanayakkara, N. D. Bronstein, S. Ferrere, J. L. Blackburn, and E. M. Miller (National Renewable Energy Laboratory)
- 17:00 **854** *(Invited)* Graphitic Intercalation Compounds: A Versatile Nano-Template for the Synthesis of Multi-Functional Electrocatalysts – F. Hof (Centre de Research Paul Pascal - CNRS), A. Boni (University Bologna), G. Valenti (Dipartimento di Chimica - Università di Bologna), K. Huang (Centre de Research Paul Pascal - CNRS), F. Paolucci (Dipartimento di Chimica - Università di Bologna), and A. Penicaud (CNRS - University of Bordeaux)
- 17:20 **855** Novel Strategies to Interface Molecules and 2D Materials – E. M. Perez (IMDEA Nanociencia)
- 17:40 **856** Substrate Ligand Effects on Atomically Thin 2D Platinum on Graphenated 3D Structures – C. Arnold, P. Buntin (Georgia Institute of Technology), J. H. Warner (University of Oxford), J. Kacher (Georgia Institute of Technology), A. Abdelhafiz (School of Mat. Sci. & Engr. Georgia Institute of Technology), and F. M. Alamgir (Georgia Institute of Technology)
- Ballroom 6ABC, Washington State Convention Center**
- B06 Poster Session – 18:00 – 20:00**
- **857** Investigation of HF Treatment Effect on the Structure and Electrical Conductivity of Carbonized Metal–Organic Frameworks – Z. Q. Zhang, B. H. Li, C. H. Lin, and S. Lee (Chung Yuan Christian University)
 - **858** TMDC 2D Materials Synthesis via Two Steps Solution Process at Low Temperature – W. S. Choi (Hoseo University)
 - **859** Development of Formvar-Based Membranes with Controlled Porosities for Microfluidics and Large-Area Graphene Transfer – E. Dervishi, E. Aughter, J. Marquez, G. Stevens, N. Li, Q. McCulloch, C. Sheehan, R. Chamberlin, and S. Yarbrow (Los Alamos National Laboratory)
 - **860** Piezopotential-Driven Efficient Piezocatalytic Activity By Single- and Few-Layered MoSe₂ Nanoflowers – Y. J. Chung and J. M. Wu (National Tsing Hua University)
- Synthesis and Chemistry 2 – 14:40 – 18:00**
Co-Chair: Stephan Hofmann
- 14:40 **848** *(Invited)* Functionalization of 2D Materials: A Molecular Approach – S. De Feyter (KU Leuven)
- 15:00 **849** *(Invited)* Nanostructured Graphene-Coated Cathodes for High-Performance Lithium-Ion Batteries – M. C. Hersam (Northwestern University)
- 15:20 **850** *(Invited)* Graphene-Based Membranes for Nanofiltration – J. C. Grossman (MIT)

- **861** Exfoliated Vanadium Dichalcogenides (VS₂, VSe₂, VTe₂) By Lithium Intercalation Exhibit Dramatically Different Properties from Their Bulk Counterparts – Y. Wang (Nanyang Technological University), Z. Sofer, J. Luxa (Institute of Chemical Technology Prague), and M. Pumera (Nanyang Technological University)
- **862** Thin and Uniform Atomic Layer Deposited ZrO₂ Film on Functionalization Graphene – J. W. Shin (Seoul National University of Science and Technology), M. H. Kang (Kwangwoon University), S. Oh, B. C. Yang, C. H. Park, H. S. Ahn (Seoul National University of Science and Technology), T. H. Lee (Kwangwoon University), and J. An (Seoul National University of Science and Technology)
- **863** Synthesis of Optically Uniform Single Layer WS₂ for Tunable Photoluminescence – J. Park (University of North Texas), M. Kim (Sungkyunkwan University), E. Cha (University of North Texas), J. Kim (Sungkyunkwan University), and W. Choi (University of North Texas)
- **864** Anionengineered Molybdenum Disulfide Thin Film/p-Type Si Heterojunction Photocathode for Efficient Hydrogen Evolution Reaction – K. S. Choi, C. Jeon (Korea Basic Science Institute), K. C. Kwon, S. Choi, J. Lee, K. Hong, W. Son, Y. Kim, S. Han (Seoul National University), S. Y. Kim (Chung-Ang University), and H. W. Jang (Seoul National University)
- **865** Fabrication of Flexible Optoelectronic Devices Based on MoS₂/Graphene Hybrid Patterns By a Soft Lithographic Patterning Method – K. S. An, M. A. Kang, W. Song, S. Myung, S. S. Lee, J. Lim, and Y. R. Lim (Korea Research Institute of Chemical Technology)

- 11:40 **908** Effect of Iodide Treatment on the Photovoltaic Performance of Mixed Halide Perovskite Solar Cells – P. V. Kamat, G. Balakrishna, and S. Kobosko (University of Notre Dame)

Solar Cell 2 – 14:40 – 18:00

Co-Chairs: Yasuhiro Kobori and Christine Luscombe

- 14:40 **909** High Photovoltage Sequential Series Multijunction Dye-Sensitized Solar Cells (SSM-DSCs) – H. Cheema and J. H. Delcamp (The University of Mississippi)
(Invited) Linker Group Effects of Linearly Pi-Extended Porphyrins for Solar Energy Conversion – Y. Hu, R. G. W. Jinadasa, S. Yellappa, W. Webre, M. Thomas, F. D'Souza (University of North Texas), and H. Wang (University of North Texas)
- 15:00 **910** *(Invited)* Efficient Dyes with Unexpected Colors for Dye-Sensitized Solar Cells – C. Y. Lin (National Chi Nan University)
- 15:20 **911** Break
- 15:40 **912** *(Invited)* Time Resolved EPR Study on Photoinduced Charge-Transfer Trap States in Thiophene-Thiazolothiazole Copolymers Films – Y. Kobori, Y. Yamamoto, T. Ako (Kobe University), H. Nagashima (Kobe University), T. Tachikawa (Kobe University), and I. Osaka (Hiroshima University)
- 16:20 **913** *(Invited)* Amphiphilic Block Copolymers and Their Hybrids for Efficient Aqueous-Processed Solar Cells – C. Luscombe (University of Washington) and J. Li (Zhejiang University)
- 16:40 **914** *(Invited)* Improved Interfaces in Multilayered Organic-Inorganic Hybrid Solar Cells with π -Conjugated Polymers-Antimony Sulfide-Strontium Titanate-Titanium Oxide – M. Yukawa, A. Hayakawa (Sekisui Chemical Co., Ltd.), and T. Sagawa (Kyoto University)
- 17:00 **915** Growth of Hybrid Metal-Organic Perovskites with Controlled Crystal Orientation – S. Ozden (Los Alamos National Lab) and A. D. Mohite (Los Alamos National Laboratory)
- 17:20 **916** Fullerene Derivatives As Electron Transporting Materials for Perovskite Solar Cells – O. Fernandez-Delgado, E. Castro, C. Tian, C. Ruiz (University of Texas at El Paso), and L. Echegoyen (The University of Texas at El Paso)
- 17:40 **917** Fabrication and Characterization of Cesium-Doped Mixed Cation Perovskite Solar Cells Using Anti-Solvent Spin-Coating Method – H. Sarvari (University of Kentucky), Z. Ye, F. Wang (University of Electronic Science and Technology of China), S. Park, K. Graham (University of Kentucky), S. Li (University of Electronic Science and Technology of China), and Z. D. Chen (University of Electronic Science & Technology of China)

Ballroom 6ABC, Washington State Convention Center

B07 Poster Session – 18:00 – 20:00

Co-Chairs: Hiroshi Imahori, Prashant V. Kamat, and Kei Murakoshi

- **918** Additives for TiO₂ Modifications: A Case Study of Dye-Sensitized Solar Cells – H. Cheema (The University of Mississippi)
- **919** A Novel Catalyst for Electroreduction of CO₂ to Ethanol – J. Fan, L. Cai, and Q. Hao (Nanjing University of Science and Technology)

B07

Inorganic/Organic Nanohybrids for Energy Conversion

Nanocarbons

Room 203, Washington State Convention Center

Solar Cell 1 – 09:20 – 12:00

Co-Chairs: Prashant V. Kamat, Eric Wei-Guang Diao, and Hiroshi Imahori

- 09:20 **902** Inorganic/Organic Nanohybrid Materials for Photovoltaic Applications – A. E. Kobryn (National Institute for Nanotechnology)
- 09:40 Break
- 10:00 **903** Correlation of Band Electronic Structure to Efficiency in Perovskite Solar Cells with Vanadium Oxide Buffers – K. Eom, I. H. Yoo, H. Han, and H. Seo (Ajou University)
- 10:20 **904** *(Invited)* Lead-Free Perovskite Solar Cells Based on Various Contact Electrodes – E. W. G. Diao (National Chiao Tung University)
- 10:40 **905** *(Invited)* Colloidal Pb-Free Perovskite Nanocrystals for Optoelectronic Energy Applications – A. Nag (Indian Institute of Science Education and Research Pune)
- 11:00 **906** *(Invited)* Exploitation of Nanomaterials and Interfacial Engineering in Perovskite Solar Cells – H. S. Jung (Sungkyunkwan University)
- 11:20 **907** *(Invited)* Impacts of Nanostructures and Interfaces on Perovskite Solar Cell Performance – G. Cao (University of Washington)

- **920** Low Molecular Mass Organogelators As Additives in Liquid Electrolyte Dye Sensitized Solar Cells – S. Sarwar (University of Science & Technology, Korea Institute of Energy Research), S. Hong (Korea Institute of Energy Research, University of Science & Technology), and C. H. Han (University of Science & Technology)

B08

Porphyrins, Phthalocyanines, and Supramolecular Assemblies

Nanocarbons / Organic and Biological Electrochemistry
Room 204, Washington State Convention Center

Supramolecular Assemblies – 08:00 – 12:20

Co-Chairs: Nathalie Solladie and Bernhard Kräutler

- 08:00 **1000** Polypeptides As Complexing Units – N. Solladie (Laboratoire de Chimie de Coordination - CNRS)
- 08:20 **1001** Amphiphilic and Self-Organizing Tetraazaporphyrins By Molecular Design – S. H. Eichhorn, E. Abdulhamied (University of Windsor), C. DeWolf (Concordia University), M. M. Ahmida, and H. Kayal (University of Windsor)
- 08:40 **1002** Formation of Hydrogen-Bonded Supramolecular Hetero-Triads with a Diprotonated Porphyrin – T. Kojima (University of Tsukuba)
- 09:00 **1003** One-Handed Nickel Helicates of Long Chain Oligopyrroles – J. I. Setsune, T. H. T. Nguyen, K. Imamura (Kobe University), and C. Eerdun (Inner Mongolia Medical University)
- 09:20 **1004** Dynamic Molecular Invasion into Multiply Interlocked Catenane Composed of Porphyrin and Phthalocyanine – K. Tanaka, Y. Yamada, R. Ito, S. Ogino (Nagoya University), and T. Kato (Kyoto University)
- 09:40 Break
- 10:00 **1005** Supramolecular Chemistry of Cobalt-Corrins – B. Kräutler (Institute of Organic Chemistry, University of Innsbruck)
- 10:20 **1006** Encoding Polymers with Information. A Supramolecular Porphyrin Approach – R. Nolte and J. Elemans (Radboud University)
- 10:40 **1007** Programmed Self-Assembly of Highly Fluorescent Nanostructures Formed By Host-Included Porphyrins – J. Jayawickramarajah, P. Pathak, and R. S. Vik (Tulane University)
- 11:00 **1008** Photodynamic Inhibition of Biofilm Forming Microorganisms on Surfaces – B. Roeder, A. Preuß, J. Pohl, and T. Bornhuetter (Humboldt-Universität zu Berlin)
- 11:20 **1009** A Stream-Lined Approach to Evaluating New Ru(II)-Bodipy Complexes for Photodynamic Therapy – S. Swavey (University of Dayton)
- 11:40 **1010** Mitochondrial Reactive Oxygen Species Accelerated Cancer Specific Porphyrin Accumulation to Enhance Photodynamic Therapeutic Effect in Gastric Epithelial Cells – H. Matsui (Faculty of Medicine, University of Tsukuba) and H. Kurokawa (University of Tsukuba, Faculty of Medicine)

- 12:00 **1011** Chirality Sensing, Halochromism and Solvatochromism in a Conjugated Calix[4] Pyrrole – J. P. Hill, J. Labuta (WPI Center for Materials Nanoarchitectonics), V. Březina (Charles University in Prague), S. Ishihara (WPI Center for Materials Nanoarchitectonics), L. Hanykova (Charles University in Prague), and K. Ariga (WPI Center for Materials Nanoarchitectonics)

Heme and Biological Systems – 14:40 – 18:00

Co-Chairs: Takashi Hayashi and Koichiro Ishimori

- 14:40 **1012** Preparation and Photochemical Properties of Supramolecular Hemoprotein Assemblies – T. Hayashi and K. Oohora (Osaka University, Department of Applied Chemistry)
- 15:00 **1013** Branching Reactions in Melanogenesis - Mechanism and Design Guidelines – R. Kishida (Department of Applied Physics, Osaka University) and H. Kasai (National Institute of Technology, Akashi College)
- 15:20 **1014** Coordination and Electronic Structures of Short-Lived Intermediate of Heme-Containing NO Reductases – Y. Shiro (University of Hyogo)
- 15:40 Break
- 16:00 **1015** Electron Transfer Pathway Analysis from Cytochrome C to Cytochrome C Oxidase Under Turnover Conditions – K. Ishimori (Hokkaido University)
- 16:20 **1016** Photoinduced Energy and Electron Transfer in Bacterichlorins – L. Arnaut (University of Coimbra)
- 16:40 **1017** Molecular Mechanisms of Signal Transduction in Heme-Containing Sensor Proteins – M. Martinkova (Department of Biochemistry, Charles University)
- 17:00 **1018** Supramolecular Assemblies of C-Type Cytochromes Based on 3D Domain Swapping – S. Hirota (Nara Institute of Science and Technology)
- 17:20 **1019** Direct and Mediated Spectro-Electrochemistry of Highly Oxidized Heme Species in Horseradish Peroxidase – D. A. Proshlyakov, G. LeVasseur, D. Chen (Michigan State University), Z. Zhang (Anhui University of Chinese Medicine), and G. M. Swain (Michigan State University)
- 17:40 **1020** Quantum-Interference-Enhanced Thermoelectricity in Single-Molecule Junctions – C. J. Lambert (Lancaster University)

Ballroom 6ABC, Washington State Convention Center

B08 Poster Session – 18:00 – 20:00

- **1021** Inter-Digitated Photo-Active Strands – R. Rein and N. Solladie (Laboratoire de Chimie de Coordination - CNRS)
- **1022** Versatile Synthetic Route for B-Functionalized Chlorins and Porphyrins By Varying the Size of Michael Donors: Syntheses, Photophysical and Electrochemical Redox Properties – N. Grover, N. Chaudhri, and M. Sankar (Indian Institute of Technology Roorkee)
- **1023** B-Arylamino Functionalized Porphyrins: Regioselective Synthesis, Structural, Photophysical and Electrochemical Properties – M. Sankar and K. Prakash (Indian Institute of Technology Roorkee)

B09 Poster Session – 18:00 – 20:00

- **1037** Novel Approach to Synthesizing Carbide Materials from a Cellulosic Precursor poster Format – J. K. Grubbs and T. Earls (Clemson University)
- **1038** Carbon-Electrode Dielectrophoresis to Concentrate *Trypanosoma Brucei* – E. Gullette, M. Hammer, M. G. Heustess, A. Mills, C. Stuart, M. Islam, and R. Martinez-Duarte (Clemson University)
- **1039** 3D Printing of Carbides Using Renewable Resources – M. C. Sullivan, M. Islam, and R. Martinez-Duarte (Clemson University)
- **1040** Assessing the Importance of Crease Parameters and Infiltration in Creating Miura-Ori Tungsten Carbide Parts – J. Patterson, P. Sterckx, M. Islam, and R. Martinez-Duarte (Clemson University)

Corrosion in Various Environments 3 – 09:00 – 11:50

Co-Chairs: Yoshinao Hoshi and Raghu Srinivasan

- 09:00 **1056** Anodic Polarization Behavior of Zn in Aqueous MgCl₂ Solutions – Y. Tsurumaki, E. Tada (Tokyo Institute of Technology), A. Ooi (Tokyo Institute of Technology), and A. Nishikata (Tokyo Institute of Technology)
- 09:20 **1057** The Attenuation of Galvanic Corrosion between Mechanically-Coupled Aluminum and Carbon-Fiber Reinforced Polymer Matrix Composites in Outdoor Environments – R. Srinivasan (UAA) and L. H. Hihara (University of Hawaii at Manoa)
Break
- 09:40 **1058** Electrochemical Monitoring of Degradation Process of Galvanized Steels in Atmospheric Environments – Y. Liu (Tokyo Institute of Technology), A. Ooi (Tokyo Institute of Technology), E. Tada, and A. Nishikata (Tokyo Institute of Technology)
- 10:10 **1059** EIS of Zinc Under Thin Solution Films with Various Thicknesses Analyzed By a Transmission Line Equivalent Circuit – C. Somphotch (Tokyo Institute of Technology), A. Ooi (Tokyo Institute of Technology), E. Tada, and A. Nishikata (Tokyo Institute of Technology)
- 10:30 **1060** Galvanic Corrosion of Mild Steel Under Iron Sulfide Layers – S. Navabzadeh Esmacely and S. Nestic (Ohio University)
- 10:50 **1061** Effect of Magnetic Field on Anodic Dissolution of Nickel in an Alkaline Solution with Chloride Ions – S. Ling, Y. Jia (Shanghai University, School of Mater. Sci. & Eng.), F. Ning (Shanghai University, School of Mater. Sci. & Eng.), H. Li (School of Mater. Sci. and Eng., Shanghai University), and Z. Lu (School of Mater. Sci. and Eng., Shanghai University)

- 11:30 **1062** Characteristics of the Oxide Films Formed on Ni-Base Alloy Cladding in Hydrogenated High Temperature Water – Y. Jia, S. Ling (Shanghai University, School of Mater. Sci. & Eng.), K. Zhang (Shanghai University, School of Mater. Sci. & Eng.), J. Ma, Q. Xiong (Shanghai University, School of Mater. Sci. & Eng.), and Z. Lu (School of Mater. Sci. and Eng., Shanghai University)

Corrosion in Various Environments 4 – 14:00 – 17:10

Co-Chair: Shinji Fujimoto

- 14:00 **1063** Transient Changes of Corrosion Potentials and Their Correlations with Metal Release During Stagnation and Flow Episodes in Drinking Water Systems – G. V. Korshin (University of Washington) and M. Fabbicino (University of Naples Federico II)
- 14:20 **1064** Distribution of Corrosion Potentials across Galvanically Coupled Interfaces Exposed in Drinking Water – M. Fabbicino (University of Naples Federico II) and G. V. Korshin (University of Washington)
- 14:40 **1065** Effect of CaCO₃-Saturated Aqueous Solutions on CO₂ Corrosion of Carbon Steel – H. Mansoori (ICMT ; Ohio University), D. Young (Ohio University), B. Brown (Institute for Corrosion & Multiphase Technology), S. Nestic, and M. Singer (Ohio University)
- 15:00 **1066** Advancing Reliability of Membrane-Based Corrosion and Environmental Sensor in Simulated Natural Gas – T. Duffy, D. M. Hall (The Pennsylvania State University), M. Ziomek-Moroz (National Energy Technology Laboratory), and S. N. Lvov (The Pennsylvania State University)
Break
- 15:20 **1067** Corrosion Protection of Pipeline Interior Surface By Sacrificial Metal Coatings in a Natural Gas Environment – J. H. Tylczak, A. Rodriguez, and M. Ziomek-Moroz (National Energy Technology Laboratory)
- 15:50 **1068** Electrochemical Investigation of Stainless Steel Cladded Carbon Steel Manufactured Via Powder Bed Selective Laser Melting – P. Murkute, S. Pasebani, and O. B. Isgor (Oregon State University)
- 16:10 **1069** Electrochemical Corrosion Behavior of 316L Stainless Steel in LiBr Solution in the Presence of Na₂MoO₄ As an Inhibitor – S. Zolfaghari (Azad University of Najafabad), A. Rabiei Baboukani (Florida International University), A. Ashrafi (Isfahan University of Technology), A. Saatchi (University of Wisconsin-Madison), and C. Wang (Florida International University)
- 16:30 **1070** Effect of Si-Addition in Stainless Steel on Surface Oxidation in High Temperature Water Environments – J. Ma, Y. Jia, S. Ling, Q. Xiong (Shanghai University, School of Mater. Sci. & Eng.), and Z. Lu (School of Mater. Sci. and Eng., Shanghai University, State Key Laboratory of Advanced Special Steels)

C01 Poster Session – 18:00 – 20:00**Co-Chairs: Sannakaisa Virtanen and Masayuki Itagaki**

- **1071** Influence of Heat Input on Corrosion Resistance of Welded UNS S32205 Investigated By EIS – J. P. Franco (UFES), K. S. F. Penna (UVV), and J. Ribeiro (Federal University of Espirito Santo)
- **1072** Corrosion Monitoring and Inhibition of Buried Pipes in a Nuclear Power Plant Using a FEM Method or Mixed Inhibitors – K. T. Kim, S. Y. Hur, Y. R. Yoo, and Y. S. Kim (Andong National University)
- **1073** The Study of Sol-Gel Protective Coatings Using Combined Analytical Tools – A. K. Surca, M. Gaberscek, and M. Rodošek (National Institute of Chemistry)
- **1074** Effect of Pad Type on Passivation Film Formation Relevant to Copper Chemical Mechanical Planarization – A. Mlynarski (Lewis University), N. Mistry, H. Shuchi, and J. J. Keleher (Lewis University, Department of Chemistry)
- **1075** The Effect of Grain Size on the Corrosion Behavior of Mg-RE Alloy ZE10A – N. Shrestha, B. R. Kersten, J. Zillinger, V. Utgikar, and K. S. Raja (University of Idaho)
- **1077** Mechanistic Study of Zr Based Nano-Anti-Corrosion Surface Pretreatment – X. Liu, H. Jiang (Stony Brook University), M. Ge (NSLS-II, Brookhaven National Laboratory), K. Kisslinger (Center for Functional Nanomaterials, BNL), E. Nazaretski, G. J. Williams, J. Thieme (Brookhaven National Laboratory), S. Petrash, D. Vonk, K. Foster (Henkel Corporation), and Y. C. K. Chen-Wiegart (Brookhaven National Laboratory)
- **1078** Mechanism and Kinetics of Goethite Dissolution in Water By First-Principles Simulations – K. Klyukin (University of Nebraska-Lincoln), K. M. Rosso (Pacific Northwest National Laboratory), and V. Alexandrov (University of Nebraska-Lincoln)
- **1079** Electrochemical Corrosion Studies of Molybdenum Disulfide, Boron Nitride, and Tungsten Disulfide-Coated Stainless Steel – D. J. Arreola, S. Mukherjee, M. Abass, and G. Singh (Kansas State University)
- **1080** A Computational Approach to Understand Corrosion Under an Externally Applied Magnetic Field – A. Oliveira (Chem. Dept. - Federal Univ. Sao Carlos, Sao Carlos, Brazil), P. Camargo (Phys. Dept, Federal Univ. S Carlos, S Carlos, Brazil), A. De Oliveira (Phys. Dept., Federal Univ. S. Carlos, S. Carlos, Brazil), and E. C. Pereira (Federal University of Sao Carlos)
- **1081** The Corrosion Behavior of a Fully Homogenized Equimolar Co-Cr-Fe-Ni-Mn and Co-Cr-Fe-Ni-Al High Entropy Alloys in Sulfuric Acid and Saline Solutions – C. C. Yen (National Tsing Hua University), C. Y. Huang, M. C. Tsai, M. H. Tsai, and S. K. Yen (National Chung Hsing University)

- **1082** Microstructural and Electrochemical Characterization of Friction Stir Welded Aluminum Alloys – M. Magnani, H. M. Gonçalves, A. V. Benedetti, and C. S. Fugivara (São Paulo State University, Institute of Chemistry)
- **1083** Effect of Hot-Dip Aluminizing on High-Temperature Corrosion of Fe-Cr Steels – D. Lee and M. J. Kim (Sungkyunkwan University)
- **1084** Effect of Imidazoline Corrosion Inhibitors on Erosion/Corrosion Processes - an Electrochemical Investigation – A. Mobarakinejad (National Iranian Oil Company)
- **1085** A pH Sensing Channel Flow Double Electrode to Investigate Anodic Dissolution of Mg and Mg Alloys with Real-Time Surface Observation – Y. Hoshi, K. Miyazawa, I. Shitanda, and M. Itagaki (Tokyo University of Science)
- **1086** Synergetic Properties of Some Polymers with Antiscaling and Anticorrosive Action for Industrial Cooling Water Systems Protection – F. Branzoi (Institute of Physical Chemistry) and V. Branzoi (University Politehnica Bucharest)

G02 High Temperature Corrosion and Materials Chemistry 13

High Temperature Materials / Corrosion

Room 305, Washington State Convention Center

Chromium and Chromia – 07:55 – 10:40**Co-Chairs: Elizabeth J. Opila and Makoto Nanko**

- 07:55 Welcoming Remarks
- 08:00 **1118** (Invited) Chromia Semiconducting Properties Study: A Textbook Case? – L. Latu-Romain, Y. Parsa, and Y. Wouters (Univ. Grenoble Alpes)
- 08:40 **1119** New Insights into Thermal Chromia Growth on Fe18Cr(10Ni) Model Alloys at 900°C: Scaling Kinetics and Microstructures – M. Hänsel (Forschungszentrum Jülich GmbH), V. Shemet (National Technical University of Ukraine), and T. Markus (Mannheim University of Applied Sciences)
- 09:00 **1120** Auxiliary Electrodes for Chromium Vapor Sensors – J. Fergus, M. Shahzad, and T. Britt (Auburn University)
- 09:20 **1121** Surface Pretreatment of Alumina Forming Alloys and Its Implication on Cr Evaporation – A. N. Aphale, L. Ravi Narayan (Materials Science and Engineering, Univ of Connecticut), B. Hu (Materials Science and Engineering, Univ. of Connecticut), A. Pandey (LG Fuel Cells Systems), and P. Singh (Materials Science and Engineering, Univ. of Connecticut)
- 09:40 Break
- 10:00 **1122** Hydrogen Interaction Properties of Cr₂O₃ Passive Films upon Helium Ions Irradiation – Y. Ling, D. Wu, and Z. Xin (Tsinghua University)
- 10:20 **1123** Investigation of Surface Interactions between Volatile Chromium Species and Ceramics – G. Tatar, P. Gannon, S. Dansereau, and E. Remington (Montana State University - Bozeman)

Corrosion in Energy Conversion Systems 2 – 10:40 – 12:00**Co-Chairs: Elizabeth J. Opila and Makoto Nanko**

- 10:40 **1124** Electrochemical Studies of Hydrogen in LiF-BeF₂ (FLiBe) – F. Carotti, H. Wu, E. Liu, B. Goh, and R. O. Scarlat (University of Wisconsin - Madison)
- 11:00 **1125** Hydrothermal Corrosion of SiC and FeCrAl for Accident Tolerant Fuel Cladding – S. S. Raiman (Oak Ridge National Laboratory), P. Doyle (University of Tennessee), K. Terrani (Oak Ridge National Laboratory), and R. B. Rebak (General Electric Global Research Center)
- 11:20 **1126** Long-Term Corrosion Testing of Inconel Alloy 625 in Molten LiCl-Li₂O-Li – W. Phillips (University of Nevada Reno) and D. Chidambaram (Nevada Institute for Sustainability)
- 11:40 **1127** Electrodeposited Inconel and Stellite like Coatings for Improved Corrosion Resistance in Biocombustors – T. D. Hall, S. H. Vijapur, D. Wang, E. J. Taylor, M. Inman, S. Snyder (Faraday Technology, Inc.), and M. Brady (Oak Ridge National Laboratory)

Surface Engineering for Corrosion Protection – 14:00 – 17:20**Co-Chairs: Jeffrey Fergus and Paul Gannon**

- 14:00 **1128** *(Invited)* Developing Environmental Barrier Coatings Resistant to Molten Calcium-Magnesium-Aluminosilicate (CMAS) – V. L. Wiesner, B. J. Harder (NASA Glenn Research Center), A. Garg (NASA Glenn Research Center, University of Toledo), and N. P. Bansal (NASA Glenn Research Center)
- 14:40 **1129** The Influence of Aluminum Nitrate Pre-Treatment on High Temperature Oxidation Resistance of Dip-Coated Silica Coating on Galvanized Steel – T. C. Yang, J. K. Chang, and C. S. Lin (National Taiwan University)
- 15:00 **1130** EBSD Study of 55 Wt.% Al-Zn Coating and Its Corrosion Behavior Effected By Austenitization Heat Treatment – J. K. Chang, T. C. Yang, and C. S. Lin (National Taiwan University)
- 15:20 **1131** Hot Corrosion Behavior of Multilayered Titanium Aluminum Carbide/Yttria-Stabilized Zirconia Coatings for Silicon Carbide – M. McCleary, R. Amendola, Z. Benedict (Montana State University), and J. L. Smialek (NASA Glenn Research Center)
- 15:40 Break
- 16:00 **1132** Thermal, High and Low Cycle Fatigue Life of 80 Micron Thick Graded Alumina PVD Coatings for Oxidation Resistance Application – T. R. K H (Indian Institute of Science)
- 16:20 **1133** Formation Process and Stability of Co-W Oxide from an Electroplated Co-W Alloy Coating at 1000 °C for Cr-Based Steels – L. Gan, H. Murakami (National Institute of Materials Science, Waseda University), and I. Saeki (Muroran Institute of Technology)
- 16:40 **1134** Low Cost Corrosion and Oxidation Resistance Coatings for Improved System Reliability – J. Xu, T. D. Hall, S. Snyder, M. Inman, E. J. Taylor (Faraday Technology, Inc.), and Y. Zhang (Tennessee Technological University)

- 17:00 **1135** Effect of the Composition of Co-W Oxide Conversion Layer on the Cr-Diffusion Barrier Property for SOFC Interconnect – I. Saeki (Muroran Institute of Technology), L. Gan, and H. Murakami (Waseda University)

D01**Nanoscale Luminescent Materials 5****Dielectric Science and Technology / Luminescence and Display Materials***Room 308, Washington State Convention Center***Biophotonics – 08:30 – 10:00****Co-Chair: Minoru Fujii**

- 08:30 **1153** *(Invited)* Optical Phenomena in Bio-Assembled Nanostructures with Plasmonic and Excitonic Resonances – A. O. Govorov (Ohio University)
- 09:10 **1154** Carbon Dots Based Fluorescence Nanoprobe for Cell Imaging and Single Particle Tracking – Y. Song, D. Du, and Y. Lin (Washington State University)
- 09:30 Break

Rare Earth Doping – 10:00 – 12:00**Co-Chairs: Margit Zacharias and Iain F. Crowe**

- 10:00 **1155** *(Invited)* Excitation Mechanism of Rare Earth Ions in Silicon Rich Hosts – L. R. Tessler (Unicamp)
- 10:40 **1156** *(Invited)* Naked Eye Blue Emission in Ce³⁺ Codoped SiO_xN_y: Toward Si-Based Light-Emitting Devices – F. Ehre, C. Dufour, F. Gourbilleau, X. Portier, C. Frilay, P. Marie (CIMAP, Normandie Univ, ENSICAEN, UNICAEN, CEA, CNRS), H. Rinnert (Université de Lorraine, Institut Jean Lamour), J. Cardin (CIMAP, Normandie Univ, ENSICAEN, UNICAEN, CEA, CNRS), D. Lagarde, X. Marie (LPCNO, Université de Toulouse, CNRS, INSA, UPS), W. Jadwisieniczak (School of EECS, Ohio University, USA), D. C. Ingram (Department of Physics and Astronomy), C. Labrugère (PLACAMAT, UMS 3626, CNRS-Université Bordeaux), and C. Labbé (CIMAP, Normandie Univ, ENSICAEN, UNICAEN, CEA, CNRS)
- 11:20 **1157** *(Invited)* Luminescent Rare Earth Doped Nanoparticles – F. Vetrone (INRS-EMT, Université du Québec)

Silicon Quantum Structures – 14:00 – 16:50**Co-Chairs: Tom Gregorkiewicz and Federico Rosei**

- 14:00 **1158** *(Invited)* Size Controlled Silicon Quantum Dots: A Model System for Understanding the Physics of Indirect Quantum Dots – S. Gutsch, J. López-Vidrier, D. Hiller, and M. Zacharias (University of Freiburg)
- 14:40 **1159** *(Invited)* RF Pump-Probe Modulation Spectroscopy of Silicon Nanocrystals: Determination of the Carrier Dynamics and Quantum Efficiency – I. F. Crowe and M. P. Halsall (The University of Manchester)
- 15:20 Break
- 15:50 **1160** *(Invited)* All-Inorganic Water-Dispersible Silicon Quantum Dots – M. Fujii (Graduate School of Engineering, Kobe University), H. Sugimoto, and S. Kano (Kobe University)

- 16:30 **1161** Influence on the Porous Silicon Photoluminescence By Magnetic Nanostructures – P. Granitzer, K. Rumpf (Karl Franzens University Graz), P. Poelt (University of Technology Graz), and M. Reissner (Vienna University of Technology)

Ballroom 6ABC, Washington State Convention Center

D01 Poster Session – 18:00 – 20:00

Co-Chairs: Peter Mascher, David J. Lockwood, and Federico Rosei

- **1162** Progress in Light Emission from Silicon and Germanium Nanostructures – D. J. Lockwood (National Research Council Canada)
- **1163** Effects of the Heat Treatment on the Photoluminescence Properties for $\text{La}_{1-x}\text{Pr}_x\text{VO}_4$ Phosphor Prepared by a Hydrothermal Method – H. L. Chen (Kao Yuan University, Department of Electronic Engineering), M. T. Tsai (National Formosa University, Department of Materials Science and Engineering), S. J. Young (National Formosa University, Department of Electronic Engineering), and Y. S. Chang (National Formosa University, Department of Electronic Engineering)

E01

Electrodeposition of Micro and Nano Materials for Batteries and Sensors

Electrodeposition / Battery / Sensor

Room 306, Washington State Convention Center

Electrode Materials – 14:00 – 18:00

Co-Chairs: Philippe M. Vereecken, Jie Xiao, and Chunsheng Wang

- 14:00 **1195** *(Invited)* Reactions or No Reaction: Lithium Deposition on the Surface of Solid State Electrolyte – J. Xiao (University of Arkansas, Pacific Northwest National Laboratory), B. Wu (University of Arkansas), S. Wang (University of Washington), J. A. Lochala, D. Desrochers (University of Arkansas), and J. Yang (University of Washington)
- 14:40 **1196** Electrochemical Fabrication of Freestanding Thin-Film Electrodes for Batteries and Catalysis – Y. Yang (University of Central Florida)
- 15:00 **1197** Electrodeposited Transition Metal Oxides As Separate Electrodes for Rechargeable Zinc-Air Batteries – M. Xiong, M. Labbe (University of Alberta), N. Li (Shandong University), and D. G. Ivey (University of Alberta)
- 15:20 **1198** New Approaches to Dynamic Windows Based on Metal Electrodeposition and Dissolution – C. J. Barile, S. M. Islam, J. S. Juarez-Rolon, C. Fini, T. Hull, R. Kessinger, K. Preciado, and G. K. A. Alcaraz (University of Nevada, Reno)
- 15:40 Break
- 16:00 **1199** *(Invited)* Advanced Aqueous Electrolytes for Li-ion Batteries – C. Wang (University of Maryland, College Park) and K. Xu (Army Research Laboratory)
- 16:40 **1200** Electroless Encapsulation of C-Cloth with Sn and Sn-Cu Alloy for Li-Ion Battery Anode – V. G. Watson (Florida A&M University), E. E. Kalu (Florida A&M University - Florida State University COE), Y. D. Yeboah (Florida State University), M. H. Weatherspoon (Florida A&M University - Florida State University), and J. P. Zheng (Florida State University)

- 17:00 **1201** Electrophoretic Deposition of Electrode Membrane for Solid Oxide Fuel Cells – Y. Itagaki and H. Yahiro (Ehime University)
- 17:20 **1202** Electrodeposition of Pure Phase SnSbAs Anode Material for Lithium- and Sodium- Ion Batteries – J. Ma and A. L. Prieto (Department of Chemistry, Colorado State University)
- 17:40 **1203** Dielectric Polymers Prepared By Electropolymerizing of Nitrile-Based Anions – T. Romann, E. Anderson, and E. Lust (Institute of Chemistry, University of Tartu)

Ballroom 6ABC, Washington State Convention Center

E01 Poster Session – 18:00 – 20:00

- **1204** Structure Stability of Electrodeposited Au-Cu Alloy Micro-Cantilever Evaluated By Long-Term Vibration Test for Applications As Movable Components in MEMS Devices – K. Nitta (Tokyo Institute of Technology, CREST, JST), K. Tachibana, H. Tang (Tokyo Institute of Technology, CREST, JST), C. Y. Chen, T. F. M. Chang, D. Yamane (CREST, JST, Tokyo Institute of Technology), T. Konishi (NTT Advanced Technology Corporation, CREST, JST), K. Machida (Tokyo Institute of Technology, CREST, JST), K. Masu, and M. Sone (CREST, JST, Tokyo Institute of Technology)

E02

Surfactant and Additive Effects on Thin Film Deposition, Dissolution, and Particle Growth

Electrodeposition

Room 211, Washington State Convention Center

Surfactant Mediated Nucleation and Growth 3 – 08:00 – 12:00

Co-Chairs: Jason Zhang and Rohan Akolkar

- 08:00 **1231** Morphology Matters: Additive-Assisted Metal Foam Deposition for the Electrochemical CO_2 Conversion – A. Dutta, M. Rahaman, C. Morstein, N. Schlegel, and P. Broekmann (University of Bern)
- 08:20 **1232** *(Invited)* Operando Video Microscopy of Lithium Metal Anodes: From Dendrite Nucleation to Cell Failure – N. P. Dasgupta (University of Michigan, Ann Arbor)
- 08:50 **1233** *(Invited)* Manipulation of Structure and Morphology of Solid-Electrolyte Interphase Layer for High-Performance Li Metal Batteries – D. Wang (The Pennsylvania State University)
- 09:20 **1234** *(Invited)* Guided Growth and Smooth Deposition of Lithium Metal Film through Electrolyte Strategy – W. Xu, F. Ding, Y. Zhang, J. Qian, X. Ren, X. Li, and J. G. Zhang (Pacific Northwest National Laboratory)
- 09:50 Break
- 10:10 **1235** *(Invited)* Ultrathin Polymer Electrode Coatings to Stabilize Electrochemical Interfaces in Lithium-Ion Batteries – R. E. Carter (NRC Postdoctoral Associate, U.S. Naval Research Laboratory), J. F. Parker, M. B. Sassin, J. W. Long, and C. T. Love (U.S. Naval Research Laboratory)
- 10:40 **1236** *(Invited)* One Step Synthesis of Li-Alkyl Carbonates and Their Applications As Coatings on Li Anode – H. Liu, H. Zhou, X. Xing, Q. Yan, B. S. Lee, H. D. Lim, M. Gonzalez, and P. Liu (University of California, San Diego)

- 11:10 **1237** *(Invited)* Electrodeposition in Li in Non-Aqueous Solution – Y. Fukunaka (Nanotechnology Research Institute, Waseda), T. Homma (Res. Org. for Nano&Life Innovation, Waseda Univ.), T. Nishida, and K. Nishikawa (Kyoto University)
- 11:40 **1238** Stabilization of Electrodeposit in Soluble Lead Flow Batteries with Acetate Additive – H. Y. Chen (National Taiwan University), H. L. Tang (Dept of Bio-Industrial Mechatronics Eng Nat'l Taiwan Univ), C. Y. Lee, and Y. T. Lin (National Taiwan University)

Surfactant Mediated Nucleation and Growth 4 – 14:00 – 18:00
Co-Chairs: Peter Broekmann and Benjamin J. Wiley

- 14:00 **1239** *(Invited)* Observing the Overgrowth of a Second Metal on Silver Cubic Seeds in Solution By Surface-Enhanced Raman Scattering – D. Qin, Y. Zhang, and Y. Wu (Georgia Institute of Technology)
- 14:40 **1240** Shape Control of Electrochemically Deposited Metal Films and Nanostructures through Additive Effects – G. W. Leach, S. V. Grayli, and Y. J. Han (Simon Fraser University)
- 15:00 **1241** Molecular-Level Analysis of Surface Species for Electrochemical Deposition Processes Using Density Functional Theory Calculations and Surface Enhanced Raman Microscopy with Plasmonic Sensors – T. Homma (Dept. of Applied Chemistry, Waseda University, Res. Org. for Nano&Life Innovation, Waseda Univ.), M. Kunimoto, M. Bertz, and M. Yanagisawa (Res. Org. for Nano & Life Innovation, Waseda University)
- 15:40 **1242** Morphological Control in Solution-Deposited Silver Nanoplatelet Films – A. Vaskevich (Weizmann Institute of Science), F. Muench (Weizmann Institute of Science, Technische Universität Darmstadt), I. Kaplan-Ashiri, and I. Rubinstein (Weizmann Institute of Science)
- 16:00 **Break**
- 16:20 **1243** *(Invited)* Superconformal Filling of through Glass Holes for Application in Glass Interposers – N. Dimitrov (Department of Chemistry, Binghamton University, SUNY)
- 17:00 **1244** Annealing-Free Copper Foil Due to Ultra-Large Grain Sizes after Electroplating – W. P. Dow and P. F. Chan (National Chung Hsing University)
- 17:20 **1245** Copper Plated through-Holes for 3D Electro-Thermal Systems – S. Taushanoff (NANO3D SYSTEMS, LCC), V. M. Dubin (NANO3D SYSTEMS LLC), A. Wallace, and H. A. Mantooth (University of Arkansas)
- 17:40 **1246** A Deeper Look at Bottom-up Copper Deposition in High Aspect Ratio through Silicon Vias – D. Josell, M. Silva, J. Kildon, and T. P. Moffat (NIST)

Ballroom 6ABC, Washington State Convention Center

E02 Poster Session – 18:00 – 20:00
Co-Chair: Thomas P. Moffat

- **1247** Physico-Chemical Properties of Lead Dioxide Based Composites – O. Shmychkova, V. Knysh, T. Luk`yanenko, and A. Velichenko (Ukrainian State University of Chemical Technology)

- **1248** Cupric Oxide Thin Films for Optoelectronic Application – S. Kumar Jr., S. Saralch Sr., and D. Pathak Sr. (SRI SAI UNIVERSITY PALAMPUR, HIMACHAL PRADESH, INDIA)
- **1249** Electrolytic Deposition of Cisplatin on Magnesium for Biomedical Applications – M. C. Tsai (National Chung Hsing University), Y. L. Lai (China Medical University Hospital, Taiwan, National Chung Hsing University), S. R. Hsu, and S. K. Yen (National Chung Hsing University)
- **1250** Fabrication of Cu-Ag Film By Electrodeposition in Ammonia-Based Electrolyte – Y. Jeon, M. J. Kim, S. Choe, H. C. Kim, and J. J. Kim (Seoul National University)

F01 Industrial Electrochemistry and Electrochemical Engineering General Session
Industrial Electrochemistry and Electrochemical Engineering Room 618, Washington State Convention Center

General Session 3 – 09:00 – 12:00
Co-Chair: John A. Staser

- 09:00 **1283** Development of Advanced Electrokinetic Process for Brackish Water Desalination – S. Y. Pan (National Taiwan University), S. Snyder (Idaho National Laboratory), Y. Lin (Argonne National Laboratory), P. C. Tseng (Argonne National Laboratory, National Taiwan University), and P. C. Chiang (National Taiwan University)
- 09:20 **1284** Selective Ion Removal from Water Using Flow-through Electrode Capacitive Deionization (ftecDI) – P. G. Campbell, S. A. Hawks, M. R. Cerón, T. A. Pham, P. Shea, B. C. Wood, and M. Stadermann (Lawrence Livermore National Laboratory)
- 09:40 **1285** Disinfection of Seawater and Its Neutralization Using Seawater Battery – J. S. Park, J. Park (UNIST), S. M. Hwang, and Y. Kim (Ulsan National Institute of Science and Technology)
- 10:00 **1286** Next Generation Water Recovery for a Sustainable Closed Loop Living – D. Wang, S. H. Vijapur, T. D. Hall, E. J. Taylor, S. Snyder (Faraday Technology, Inc.), and C. R. Cabrera Jr. (University of Puerto Rico at Rio Piedras)
- 10:20 **Break**
- 10:40 **1287** Performance of Treatment of Oil-Sands Produced Water By Electrocoagulation – T. Shu, B. Fuladpanjeh-Hojaghan, N. Yasri, M. Nightingale, M. Trifkovic, and E. P. L. Roberts (University of Calgary)
- 11:00 **1288** Progress in the Development of Prototypes for Phosphatic Clay Electrokinetic Dewatering – A. Dizon and M. E. Orazem (University of Florida)
- 11:20 **1289** In-Situ De-Aeration Towards Performance Stability of Capacitive Deionization Cells – L. Caudill, A. Omosebi, X. Gao (University of Kentucky), J. Landon (University of Kentucky Center for Applied Energy Research), and K. Liu (University of Kentucky)
- 11:40 **1290** Long-Term Evaluation of Modified Activated Carbon Electrodes for Capacitive Deionization – A. Serrano Mora, D. P. Wilkinson, and M. Mohseni (University of British Columbia)

General Session 4 – 14:00 – 18:00**Co-Chair: Elizabeth J. Biddinger**

- 14:00 **1291** Electrochemical Reduction of Greenhouse Gas with Couette-Taylor Flow (CTF) Mixer – S. Baek, H. Kim, K. H. Kim (Seoul National University), I. Choi (Kangwon National University), O. S. Kwon (Seoul National University), O. J. Kwon (Incheon National University (INU)), and J. J. Kim (Seoul National University)
- 14:20 **1292** Effect of Impurities in Precious Metal Recovery By Electrodeposition-Redox Replacement Method from Industrial Side-Streams and Process Streams – K. Yliniemi, P. Halli, I. Korolev, Z. Wang, P. Hannula, and M. Lundström (Aalto University)
- 14:40 **1293** Selective Metalization of Non-Conductive Materials By Macropatterning of Catalytic Particles and the Application of a Gradient Magnetic Field – S. Danilova, J. E. Graves (Coventry University), E. Pellicer, J. Sort (Autonomous University of Barcelona), and A. J. Cobley (Coventry University)
- 15:00 **1294** Measurements and Simulations of Lithium Isotopes Concentration Fluxes during Electrolytic Lithium-7 Enrichment – P. Sarswat, M. L. Free, and Z. Zhang (University of Utah)
- 15:20 **1295** Electrochemical Removal of Copper from Regenerated Pickling Solutions of Steel Plants – E. Karakaya (Middle East Technical University), M. S. Aras (MEGAP Co.), M. Erdogan (Yildirim Beyazit University), S. Karagul, M. Ersoy (Borusan Technology Department and R&D Co.), and I. Karakaya (Middle East Technical University)
- 15:40 **1296** Alkaline Plating and Striping of Metal-Amine Complexes for Amine Regeneration in Gas Scrubbing Processes – M. Wang, S. B. Hariharan (Massachusetts Institute of Technology), M. E. Massen-Hane (Curtin University), R. Shaw, and T. A. Hatton (Massachusetts Institute of Technology)
- 16:00 Break
- 16:20 **1297** Pressure Influence on Acoustic Cavitation Phenomenon in Ionic Liquids: Electrochemical Study – B. Naidji (UTINAM UMR 6213 CNRS Univ BOURGOGNE FRANCHE COMTE), L. Hallez (UTINAM UMR 6213 CNRS University Bourgogne Franche-Comté), A. Et Taouil, M. Rebetz, and J. Y. Hihn (UTINAM UMR 6213 CNRS Univ BOURGOGNE FRANCHE COMTE)
- 16:40 **1298** Ordered Three Dimensional Electrodes for Enhanced Mass Transfer – J. Hereijgers (University of Antwerp, ART Group), J. Lölsberg, M. Wessling (RWTH Aachen University), and T. Breugelmans (University of Antwerp, Research group ART)
- 17:00 **1299** Anode Materials for Sulfide Oxidation in Alkaline Wastewater: An Activity and Stability Performance Comparison – E. Ntagia, E. Fiset, L. da Silva Lima, X. Zhang (CMET, Ghent University), A. W. Jeremiassé (MAGNETO special anodes B.V.), and K. Rabaey (CMET, Ghent University)

17:20 **1300** Electrosynthesis of Near-Neutral Ferrate Species for Drinking Water Treatment Using a Recirculating Batch Reactor – A. Bonakdarpour, M. Cataldo, M. Mohseni, and D. P. Wilkinson (University of British Columbia)

17:40 **1301** A Comparative Study on Electrochemical Treatment of Wastewater By Using BDD Electrodes with Different Sizes of Crystals – B. Yang and Z. Li (Zhejiang University)

Ballroom 6ABC, Washington State Convention Center**F01 Poster Session – 18:00 – 20:00**

- **1302** Electrochemical Decontamination Process an Effective Alternative to Treat Textile Effluents – S. Hussain (GIK Institute of Engineering Sciences & Technology), A. Rehman Gohar, A. Ali Khan, M. Bilal, and Q. Ahmad (GIK Institute of Engineering Sciences & Technology,)
- **1303** Enhanced Performance of Compact Electrolytic Cells through Optimization of Cell Structures and Components to Produce Chemicals from Brine for Use in Sequestration of Carbon Dioxide – H. Y. Ha (Korea Institute of Science and Technology), J. Kim (Korea Institute of Science and Technology, Korea University), S. R. Park (Korea Institute of Science and Technology), and K. B. Lee (Korea University)
- **1304** Quantifying the Trade-Offs between Energy Consumption and Salt Removal in Membrane-Free Cation Intercalation Desalination – S. Liu (Mechanical Science and Engineering UIUC) and K. C. Smith (Mechanical Science and Engineering)
- **1305** Optimization of Mechanical Properties of Nickel-Cobalt Coatings from Sulphamate Baths – E. Karakaya, M. Başkan (Middle East Technical University), M. Erdogan (Yildirim Beyazit University), and I. Karakaya (Middle East Technical University)
- **1306** Carbonization Temperature As a Key Factor for Ultrahigh Performance Activated Carbon from Polyaniline for Capacitive Deionization – R. L. Zornitta, F. G. E. Nogueira, and L. A. M. Ruotolo (Federal University of Sao Carlos)
- **1308** Blackwater Disinfection Using Potentiodynamic Methods and Surface-Modified Electrochemical Packed Bed Electrode Materials – J. O. Thostenson (Duke University), R. Mourouvin (Duke University, École Centrale de Lyon), C. Hangarter (U.S. Naval Research Laboratory), E. Ngaboyamahina (Duke University), B. T. Hawkins, K. L. Sellgren (RTI International), C. Rossman, C. B. Parker, M. A. Deshusses (Duke University), B. R. Stoner (Duke University, RTI International), and J. T. Glass (Duke University)
- **1309** Electrochemical Behavior of Chalcopyrite Electrode and Morphological Characterization in Acid Salt Solution – R. N. Peres, C. S. Fugivara (São Paulo State University, Institute of Chemistry), P. H. Suegama (Universidade Federal da Grande Dourados), D. Bevilacqua, and A. V. Benedetti (São Paulo State University, Institute of Chemistry)

Multiscale Modeling- Methods and Applications – 08:00 – 12:00

Co-Chairs: Venkat R. Subramanian and Jean St-Pierre

- 08:00 **1323** *(Invited)* Stochastics in Energy Storage: Interface to Microstructure – P. P. Mukherjee, A. N. Mistry (Purdue University), and K. Smith (National Renewable Energy Laboratory)
- 08:40 **1324** A Machine Learning Based Computational Protocol for Rapid Screening of Carbon Based Materials for Lithium Ion Battery Applications – S. S. Jang (Georgia Institute of Technology) and P. Sood (Computational NanoBio Technology Lab, GaTech)
- 09:00 **1325** Is There Room for Theory in Data Science? Encoding Physics into Machine Learning Algorithms – N. Dawson-Elli (University of Washington, Seattle) and V. R. Subramanian (VS)
- 09:20 **1326** Efficient Simulation of Novel Electrode Architectures – A. Subramanian, T. Jang (University of Washington, Seattle), Y. Qi (University of Washington), P. Liu (University of California, San Diego), and V. R. Subramanian (University of Washington, Seattle, Pacific Northwest National Laboratory)
- 09:40 Break
- 10:00 **1327** A Reduced Order Method for Three-Dimensional Lithium-Ion Battery Simulation – G. Li, S. Li (Ansys Inc.), and C. Yang (National Renewable Energy Laboratory)
- 10:20 **1328** The Analytical Transport Network Model for Diffusive-Reactive Flow in 3-D Microstructural Networks: A Computationally Economical Model for Potential Use in Multi-Scale Modeling Efforts – A. P. Cocco (U.S. Army Research Laboratory), A. Nakajo (Ecole Polytechnique Fédérale de Lausanne), K. N. Grew (U.S. Army Research Laboratory), and W. K. S. Chiu (University of Connecticut)
- 10:40 **1329** Quantum-Continuum Simulations of High Power Density Oxide Electrodes for Pseudocapacitive Energy Storage – N. D. Keilbart (The Pennsylvania State University), Y. Okada, S. Higai (Murata Manufacturing Co., Ltd.), and I. Dabo (The Pennsylvania State University)
- 11:00 **1330** Alloying Effects on Superionic Conductivity in Lithium Indium Halides for All-Solid-State Batteries – N. Adelstein (San Francisco State University), A. Zevgolits (San Francisco State University, Georgetown University), B. C. Wood (Lawrence Livermore National Laboratory), Z. Mehmedović, A. T. Hall, and T. C. Alves (San Francisco State University)

- 11:20 **1331** Direct Estimation of Parameters from Charge-Discharge Curves of Lithium-Ion Batteries Using Pseudo-2 Dimensional (P2D) Models – S. Kolluri (University of Washington), N. Dawson-Elli (University of Washington, Seattle), C. D. Parke, M. Pathak (University of Washington), Z. Wu, S. Santhanagopalan (National Renewable Energy Laboratory), and V. R. Subramanian (University of Washington, Seattle)
- 11:40 **1332** Model - Based Design and Control of Lead-Acid Batteries: Is There Any More Juice Left in a System That Is 158 Years Old? – A. Subramanian (University of Washington, Seattle), D. Majumdar (Exide Technologies), and V. R. Subramanian (University of Washington, Seattle, Pacific Northwest National Laboratory)

Multiscale Modeling- Fundamental Systems – 14:00 – 17:20

Co-Chairs: Gerardine G. Botte and John N. Harb

- 14:00 **1333** *(Invited)* Modeling Glassy Electrolytes for All-Solid-State Sodium Ion Batteries – A. Dive, C. C. King (Washington State University), S. W. Martin (Iowa State University), S. P. Beckman, and S. Banerjee (Washington State University)
- 14:40 **1334** Monte Carlo Model of Ion Conduction in Non-Arrhenius Glasses – C. C. King and S. P. Beckman (Washington State University)
- 15:00 **1335** Thermodynamic and Kinetic Database for Hydration, Protonic Diffusion and Stability in Doped-BaHfO₃ As High-Temperature Proton Conducting Electrolyte – L. Zhang and M. Liu (School of Materials Science and Engineering, Georgia Tech)
- 15:20 **1336** Nanoconfinement for Multi-Step Reaction Cascade System – K. S. Chavan and S. Calabrese Barton (Michigan State University)
- 15:40 Break
- 16:00 **1337** Electrochemical Properties of Anatase-Type TiO₂ Nanoparticles with Different Morphology – G. Juhasz (Tokyo Institute of Technology)
- 16:20 **1338** Quantum-Continuum Modeling of Pd-Au(111) Surface Alloys Under Electrochemical Conditions – S. E. Weitzner and I. Dabo (The Pennsylvania State University)
- 16:40 **1339** Charge Transport and Stability of a Semiconductor-Solution Interface Under Electrical Bias from First Principles – Q. Campbell and I. Dabo (The Pennsylvania State University)
- 17:00 **1340** Orthogonal Collocation on Finite Elements for Flow Simulation – T. Jang, C. Pathak (University of Washington, Seattle), V. Ramadesigan (Indian Institute of Technology, Bombay), and V. R. Subramanian (Pacific Northwest National Laboratory, University of Washington, Seattle)

Silicon Compatible Materials, Processes, and Technologies for Advanced Integrated Circuits and Emerging Applications 8

Electronics and Photonics / Dielectric Science and Technology
Room 307, Washington State Convention Center

Technologies for Emerging Applications – 08:30 – 12:00

Co-Chairs: Hemanth Jagannathan and Evgeni Gusev

- 08:30 **1378** (Invited) A Nonvolatile SRAM Based on Ferroelectric HfO₂ capacitor for IoT Power Management – M. Kobayashi, N. Ueyama, and T. Hiramoto (Institute of Industrial Science, The University of Tokyo)
- 09:10 **1379** (Invited) Beyond CMOS: Memristor and Its Application for Next Generation Storage and Computing – C. Liu, F. Liu (Clarkson University), and H. Li (Duke University)
- 09:50 Break
- 10:00 **1380** (Invited) Enabling on-Device Learning with Deep Spiking Neural Networks for Video Classification – N. Soares, A. Zyarah, and D. Kudithipudi (Rochester Institute of Technology)
- 10:40 **1381** (Invited) Complementary III-V Heterojunction Tunnel FETs Monolithically Integrated on Silicon – C. Convertino, H. Schmid (IBM Research Zurich), L. Czornomaz (IBM Zurich Research Laboratory), H. Riel (IBM Research-Zurich), S. Sant (ETHZ), A. Schenk (Swiss Federal Institute of Technology), and K. Moselund (IBM Research Zurich)
- 11:20 **1382** (Invited) Superconducting Qubits and Superconducting Digital Electronic Circuits on 300mm Wafers – S. S. Papa Rao, C. Hobbs, S. Olson (SUNY Polytechnic Institute), N. Forouzani (LPS, University of Maryland), H. Chong, H. Stamper, B. Martinick, D. Ashworth, V. Kaushik, K. A. Dunn, K. Beckmann, J. Nalaskowski, S. Bennett, M. Rodgers, T. Murray, S. Novak, B. Baker-O'Neal, C. Borst (SUNY Polytechnic Institute), K. Osborn (LPS, University of Maryland), and M. Liehr (SUNY Polytechnic Institute)

Processes for Advanced Integrated Circuits 2 – 14:00 – 18:00

Co-Chairs: Kuniyuki Kakushima and Zia Karim

- 14:00 **1383** (Invited) Development of Plasma Atomic Layer Etching in Close-To-Conventional Etch Tools – M. Cooke and A. Goodyear (Oxford Instruments Plasma Technology)
- 14:40 **1384** Ultra-High Sensitivity Surface Photovoltage Measurement of Heavy Metal Contamination in Silicon Wafers with Fast Metal Identification – M. Wilson, A. Savtchouk, J. D'Amico, B. Schrayner, D. Marinskiy, P. Edelman, C. Almeida, T. Zajac, A. D. Findlay, and J. Lagowski (Semilab SDI)
- 15:10 **1385** Increasing the Operation Voltage of Integrated Solid-State Diodes through Nanostructured Porous Silicon Technology – L. M. Strambini (Consiglio Nazionale delle Ricerche), M. Marchesi (STMicroelectronics), M. Sambì, F. Toia, S. D. Mariani, M. Morelli (ST Microelectronics), and G. Barillaro (University of Pisa)

- 15:40 **1386** Quasi-Zero-Voltage Controlled Etching of Macropores in n-Type Silicon – L. M. Strambini (Consiglio Nazionale delle Ricerche), C. Cozzi, and G. Barillaro (University of Pisa)
- 16:10 Break
- 16:30 **1387** Model Based Corona Charge - Kelvin Probe Characterization of Patterned Structures – D. Marinskiy and J. Lagowski (Semilab SDI)
- 17:00 **1388** Effect of Hydrogen on Reliability with Various Deposition Temperatures of Al₂O₃ Gate Insulator in In-Ga-Zn-O Thin Film Transistors – K. Park (KAIST, Korea Advanced Institute of Science and Technology, Module Development Team, Samsung Display), G. J. Jeon, S. H. Lee, and S. H. K. Park (KAIST)
- 17:30 **1389** Effect of Surface Preparation on the Residual Oxide Thickness and Material Loss of In-Ga-As Epi Layer – J. Na and S. Lim (Dept. Chemical and Biomolecular Eng. Yonsei University)

Ballroom 6ABC, Washington State Convention Center

G01 Poster Session – 18:00 – 20:00

Co-Chairs: Fred Roozeboom and Stefan De Gendt

- **1390** Investigating the Elimination of Oxygen Vacancy and Nitrogen Gap in Hafnium Oxide Films Induced By Different Nitridation Process – Y. H. Lu, M. C. Chen, T. C. Chang, Y. S. Lin, and X. W. Liu (Department of Physics, National Sun Yat-Sen University)
- **1391** Enhanced Non-Linearity Factor in Ferroelectric Tunnel Junction Based on HfO₂ Heterojunction – J. Lee, H. J. Lee, and T. Choi (Sejong University)
- **1392** Selfrectifying Memristor Device Based on Polarization Switching and Space Charge Distribution Via External Electric Field – H. J. Lee, J. Lee, and T. Choi (Sejong University)
- **1393** Improvement of Line Width Roughness and Line Edge Roughness for Ultrascaled Finfet Technologies – X. Jiang (SMICS) and H. Zhang (Semiconductor Manufacturing International Corporation)
- **1394** The Physical Characterization of Single-Crystalline Chromium Silicide Nanowires Grown By Chemical Vapor Deposition – H. F. Hsu, P. C. Tsai, and K. C. Lu (National Cheng Kung University)
- **1395** Reliability Characteristics of Low Dielectric Constant Materials Under Mechanical-Electrical Stress – Y. L. Cheng, Y. L. Huang, and C. Y. Lee (National Chi-Nan University)
- **1396** Effect of Copper Diffusion in Low Dielectric Constant Dielectrics Under Thermal Stress on Electrical and Reliability Characteristics – C. Y. Lee (National Chi-Nan University), W. Y. Chang (National Chiao-Tung University), and Y. L. Cheng (National Chi-Nan University)
- **1397** Plasma-Based Copper Etch Process and Reliability – B. Gao (Texas A&M University), Y. Gao (Ohio University), Y. Kuo (Texas A&M University), and T. Yuan (Ohio University)
- **1398** Adjustable Silicon Corner Rounding Radius by Wet Technique – P. T. Tou, H. Y. Liao, H. C. Huang, K. Y. Shih, and M. C. Lu (Powerchip Technology Corporation)

- **1399** Novel Method for Metal-Insulator-Metal (MIM) Plasma Etching Residue Removal – H. A. Chen, P. T. Tou, H. C. Huang, K. Y. Shih, and M. C. Lu (Powerchip Technology Corporation)

H01

Wide Bandgap Semiconductor Materials and Devices 19

Electronics and Photonics

Room 213, Washington State Convention Center

Ultra-Wide Bandgap Materials and Devices 1 – 08:30 – 12:00

Co-Chairs: Travis J. Anderson and Marko J. Tadjer

- 08:30 **1413** (Invited) High Al-Content AlGaN for Power Electronics: A Fabrication Perspective – E. A. Douglas, B. Klein, A. A. Allerman, A. M. Armstrong, R. J. Kaplar, A. G. Baca, and J. C. Neely (Sandia National Laboratories)
- 09:00 **1414** (Invited) Latest Progress on B-III-N Alloy Research and Working Principle of TMA Preflow on AlN MOVPE – X. Li (King Abdullah University of Science & Technology (KAUST))
- 09:30 Break
- 09:50 **1415** (Invited) Process Monitoring of 100 GaN-on-Diamond Wafers – D. Francis and F. Lowe (Element Six)
- 10:20 **1416** (Invited) GaN-on-Diamond RF Transistors: The Next Generation Electronics – M. Kuball, J. W. Pomeroy (University of Bristol), and M. Uren (University of Bristol, UK)
- 10:50 **1417** (Keynote) Gallium Oxide Electronics: Beyond SiC and GaN – M. Higashiwaki (Nat. Inst. of Info. and Comm. Tech.)
- 11:30 **1418** (Invited) High Performance β -Ga₂O₃ Nano-Membrane Field-Effect Transistors on Sapphire Substrate with Reduced Self-Heating Effect – H. Zhou (UC Berkeley, Purdue University), K. Maize, J. Noh, A. Shakouri, and P. D. Ye (Purdue University)

Ultra-Wide Bandgap Materials and Devices 2 – 14:00 – 17:20

Co-Chairs: Travis J. Anderson and Marko J. Tadjer

- 14:00 **1419** (Invited) Exploration of Process Techniques for Ga₂O₃ Based Electronics – F. Ren, S. J. Pearton, J. Yang, P. Carey (University of Florida), S. Ahn (University of Florida), R. Khanna, K. Bevlin, D. Geerpuram (Plasma-Therm), and A. Kuramata (Tamura Corporation and Novel Crystal Technology)
- 14:30 **1420** (Invited) Thick, Low-Doped Homoepitaxial Ga₂O₃ for Power Electronics Applications – M. J. Tadjer (U.S. Naval Research Laboratory), A. D. Koehler (Naval Research Laboratory), N. A. Mahadik (US Naval Research Laboratory), E. Glaser (U.S. Naval Research Laboratory, Washington DC), J. A. Freitas Jr., B. Feigelson, V. D. Wheeler (U.S. Naval Research Laboratory), K. D. Hobart, F. J. Kub (Naval Research Laboratory), and A. Kuramata (Tamura Corporation and Novel Crystal Technology)
- 15:00 **1421** Inductively Coupled Plasma Etching and Electrically Active Damage of Bulk, Single-Crystal Ga₂O₃ – J. Yang, S. Ahn, F. Ren, S. J. Pearton (University of Florida), R. Khanna, K. Bevlin, D. Geerpuram (Plasma-Therm), L. C. Tung, J. Lin, H. Jiang (Texas Tech University), and A. Kuramata (Tamura Corporation and Novel Crystal Technology)

- 15:20 Break
- 15:40 **1422** Interface State Density of Atomic Layer Deposited Al₂O₃ on β -Ga₂O₃ – C. Y. Su, T. Hoshii, I. Muneta, H. Wakabayashi, K. Tsutsui, H. Iwai, and K. Kakushima (Tokyo Institute of Technology)
- 16:00 **1423** Electron and Proton Irradiation Damage in β -Ga₂O₃ Vertical Rectifiers – J. Yang, Z. Chen, F. Ren, S. J. Pearton (University of Florida), G. Yang, J. Kim (Korea University), J. Lee, E. Flitsiyan, L. Chernyak (University of Central Florida), and A. Kuramata (Tamura Corporation and Novel Crystal Technology)
- 16:20 **1424** Quasi-Two-Dimensional β -Ga₂O₃ based Hetero-Structure Transistors – J. Kim, S. Kim, and J. Kim (Korea University)
- 16:40 **1425** Strain Engineering and Two-Dimensional Electron Gas in Polar ϵ -Ga₂O₃ – S. B. Cho and R. Mishra (Washington University in St. Louis)
- 17:00 **1426** Thermal Stability of Quasi-Two-Dimensional β -Ga₂O₃ and Its Device Application – S. Kim, J. Kim, and J. Kim (Korea University)

Ballroom 6ABC, Washington State Convention Center

H01 Poster Session – 18:00 – 20:00

- **1427** Wide Color Gamut Deep-Blue OLED Architecture for Display Application – D. K. Dubey (National Tsing-Hua University, Taiwan), R. K. Konidena (Indian Institute of Technology Roorkee, India), R. A. K. Yadav, S. S. Swayamprabha (National Tsing-Hua University, Taiwan), K. R. J. Thomas (Indian Institute of Technology Roorkee, India), and J. H. Jou (National Tsing-Hua University, Taiwan)
- **1428** Solid and Liquid State Fluorescent Sensor Using CdTe Quantum Dots for Mercury Detection – Y. Choudhary and G. Nageswaran (Indian Institute of Space Science and Technology)
- **1429** Performance Enhancement of GaN-Based Light-Emitting Diodes with Magnesium Nitride Inter-Layers – S. M. KIM (Korea Photonics Technology Institute)
- **1430** Ultraviolet Sensor Performance of Nanostructured LaCoO₃ Prepared By Solution-Polymerization Method – C. R. Michel (Universidad de Guadalajara CUCEI Departamento de Fisica), M. A. Lopez-Alvarez, A. H. Martinez, and C. A. Rodriguez Garcia (Universidad de Guadalajara CUCEI)
- **1431** AlGaN/GaN High Electron Mobility Transistors with a p-GaN Backgate Structure – W. T. Lin, W. C. Lin, Y. N. Zhong, and Y. M. Hsin (National Central University)
- **1432** AlGaN/GaN High Electron Mobility Transistors with a p-Type GaN Cap Layer – H. C. Tsai, S. C. Fan Chiang, Y. N. Zhong, and Y. M. Hsin (National Central University)
- **1433** Solid-State Diffusional Behaviors of Functional Metal Oxides at Atomic Scale – J. Y. Chen (Dep. Mater. Sci. and Eng., National Chiao Tung University), C. W. Huang (Industrial Technology Research Institute, Taiwan), and W. W. Wu (National Chiao Tung University)

- 1434 Photoconduction Properties of Crystalline Selenium Based Photodetectors with a Lateral Metal-Insulator-Semiconductor-Insulator-Metal Device Structure – Y. W. Huang, C. Y. Chang, and F. M. Pan (National Chiao Tung University)
- 1435 Influences of Crystallization of Amorphous Se on Photovoltaic Characteristics of Crystalline Se Based Schottky Junction Solar Cells – Y. J. Lin, C. Y. Chang, and F. M. Pan (National Chiao Tung University)
- 1436 The Effect of Threading Dislocation on Current-Voltage Characteristics of 3.3kV 4H-SiC Schottky Barrier Diode – M. Na (Korea Electrotechnology Research Institute), J. Keum (Korea Electrotechnology Research Institute, Changwon National University), J. H. Moon, I. H. Kang, and W. Bahng (Korea Electrotechnology Research Institute)
- 1437 Effect of Phosphor Layer Size on the Optical and Thermal Properties of Chip Scale Packaged Light-Emitting Diodes – G. H. Bak (LG Innotek Co., Ltd, Korea University), S. W. Oh, H. H. Sung, W. J. Kim, S. Yoon, H. Jeong, J. O. Song (LG Innotek Co., Ltd), and T. Y. Seong (Korea University)

H02 **Advanced CMOS-Compatible Semiconductor Devices 18**
 Electronics and Photonics
 Room 309, Washington State Convention Center

Semiconductor Sensors and Biosensors – 08:10 – 11:40
 Co-Chairs: Hiromu Ishii and Yasuhisa Omura

- 08:10 1469 *(Invited)* System-on-Chip Sensor Integration in Advanced CMOS Technology – L. Filipovic, A. Lahlalia, and S. Selberherr (Institute for Microelectronics, TU Wien)
- 08:50 1470 *(Invited)* Pixel-Parallel 3-D Integrated CMOS Image Sensors for Next-Generation Video Systems – M. Goto, Y. Honda, T. Watabe, K. Hagiwara, M. Nanba, Y. Iguchi (NHK Science and Technology Research Laboratories), T. Saraya (The University of Tokyo), M. Kobayashi (Institute of Industrial Science, The University of Tokyo), E. Higurashi, H. Toshiyoshi (The University of Tokyo), and T. Hiramoto (Institute of Industrial Science, The University of Tokyo)
- 09:30 Break
- 10:00 1471 *(Invited)* Electrochemical Biosensors Based on CMOS LSI Chips – S. Uno (Ritsumeikan University)
- 10:40 1472 *(Invited)* Point-of-Care Based System Development for Urolithiasis Recurrence Prevention – W. Y. Chung, S. Heythem (Chung-Yuan Christian University), A. Silverio (University of Santo Tomas), V. Tsai (Tien-Chen Medical Group), C. Cheng, G. W. Wu, S. K. Chang, L. C. Yen (Chung-Yuan Christian University), C. M. Yang (Chang Gung University), I. W. Lo, and S. Y. Chang (Chung-Yuan Christian University)
- 11:20 1473 Impact of Biosensor Permittivity on a Double-Gate nTFET Ambipolar Current – C. N. Macambira (University of Sao Paulo), P. G. D. Agopian (UNESP, Sao Joao da boa Vista), and J. A. Martino (University of Sao Paulo)

Memory Technology and Devices – 14:00 – 16:00
 Co-Chair: Jean-Pierre Raskin

- 14:00 1474 Towards InGaAs MS-DRAM Memory Cells – C. Navarro, S. Navarro, C. Marquez, C. Sampedro, L. Donetti (University of Granada), S. Karg (IBM Research, Zurich), H. Riel (IBM Research-Zurich), and F. Gamiz (University of Granada)
- 14:20 1475 Memory Maps: Reading Rram Devices without DC Power Consumption – S. Dueñas, H. Castán, Ó. G. Ossorio (UNIVERSIDAD DE VALLADOLID), K. Kukli (University of Helsinki, University of Tartu), M. Mikkor, K. Kalam, T. Arroval, and A. Tamm (University of Tartu)
- 14:40 1476 Impact of the Heat Conductivity of the Inert Electrode on Reram Memory Cell Performance and Endurance – M. Al-Mamun (Virginia Tech), S. W. King (Intel Corporation), and M. K. Orłowski (ECE Department Virginia Tech)
- 15:00 1477 Ultra-Fast Switching of a Free Magnetic Layer with out-of-Plane Magnetization in Spin-Orbit Torque Mram Cells – A. Makarov, V. Sverdlov, and S. Selberherr (Institute for Microelectronics, TU Wien)
- 15:20 Break

Devices Physics and Characterization 2 – 16:00 – 18:10
 Co-Chairs: Akira Yoshino and Paula Ghedini Der Agopian

- 16:00 1478 *(Invited)* FDSOI: The Technology Alternative to the Mainstream – T. Kammler (Globalfoundries)
- 16:40 1479 *(Invited)* Current Status and Trends in RF Silicon-on-Insulator Material and Device – J. P. Raskin (Université Catholique de Louvain (UCL))
- 17:20 1480 Optimization of Source/Drain Schottky Barrier Height for be SOI Mosfet – L. S. Yojo (University of Sao Paulo), R. C. Rangel (University of Sao Paulo, FATEC-SP), K. R. A. Sasaki, and J. A. Martino (University of Sao Paulo)
- 17:40 1481 Simulation Analysis of the FIN Height Influence on the Electrical Parameters of Junctionless Nanowire Transistors – T. A. Ribeiro (Centro Universitário FEI), A. Cerdeira (CINVESTAV-IPN), and M. A. Pavanello (Centro Universitário FEI)
- 18:00 Concluding Remarks

H03 **Solid-state Electronics and Photonics in Biology and Medicine 5**
 Electronics and Photonics
 Room 212, Washington State Convention Center

Energy Harvesting, Storage, and Self-Powered Applications 2 – 08:00 – 12:10
 Co-Chairs: Rusen Yang and Woochul Kim

- 08:00 1496 *(Invited)* a Strategic Approach for Co-Production of Ethylene and Hydrogen Via Electrochemical Non-Oxidative Deprotonation of Ethane – D. Ding, Y. Zhang, W. Wu, and T. He (Idaho National Laboratory)
- 08:30 1497 *(Invited)* Rational Design of Nanomaterials for Electrochemical Energy Conversion and Storage – S. Sun (Energie Materiaux Telecommunications Research Center)

09:00	1498	<i>(Invited)</i> Use of Discrete Liquid-Solid Contact Electrification As Ways of Self-Powered Sensing – D. S. Kim (Pohang University of Science and Technology)
09:30		Break
10:00	1499	Multifunctional MoS ₂ Nanocatalyst for Water Disinfection – Y. J. Lin, T. M. Chou, and Z. H. Lin (National Tsing Hua University)
10:20	1500	<i>(Invited)</i> Flexible Thermoelectric Nanogenerator Based on MoS ₂ Nanomaterials and Its Application for Self-Powered Temperature Sensor – Y. Xie (College of Energy, Xiamen University)
10:50	1501	Development of Self-Powered Mercury Ion Sensor Based on Thermoelectric Effect – Y. J. Lin, Y. H. Tsao, and Z. H. Lin (National Tsing Hua University)
11:10	1502	Fabrication of Energy-Boosted Triboelectric Nanogenerator Via Electric Field Assisted Thermal Nanoimprinting Process – D. W. Kim, D. Choi, D. Yoo, and D. S. Kim (POSTECH)
11:30	1503	Development of Portable Self-Powered Disinfection Systems Based on Triboelectric and Thermoelectric Effects – C. M. Chiu and Z. H. Lin (National Tsing Hua University)
11:50	1504	Development of Thermal Nanoimprinting Process for the Fabrication of Tailored-Triboelectric Nanogenerator – D. Yoo, D. Choi, and D. S. Kim (POSTECH)

Wearable and Healthcare Sensors – 14:00 – 18:00

Co-Chairs: Zong-Hong Lin and Dong Sung Kim

14:00	1505	<i>(Invited)</i> High-Performance Carbon Nanotube Based Flexible Electronics for Integrated Smart Sensor System – Y. Hu (Peking University)
14:30	1506	<i>(Invited)</i> New Thermoelectric Device Architecture Aiming for Low \$/W and Wearable Application – W. Kim (Yonsei University)
15:00	1507	<i>(Invited)</i> Alternating Current Electroluminescence for Stimuli-Interactive Sensing Display – C. Park (Dept of Materials Science Engineering, Yonsei University)
15:30		Break
16:00	1508	<i>(Invited)</i> Flexible and Transparent Thermally Conductive Materials for Heat Dissipation of Electronics – N. Mehra, T. Ji, and J. Zhu (The University of Akron)
16:30	1509	<i>(Invited)</i> All-Solid Hybrid Energy Fabric for Wearable Electronics – X. Fan (Chongqing University)
17:00	1510	<i>(Invited)</i> Large-Area Solution-Nanomanufactured Air-Stable 2D Material for High-Performance Electronics and Smart Sensors – W. Wu (Purdue University)
17:30	1511	<i>(Invited)</i> Transparent Conducting Oxide-Free Flexible Thin Film Electronic Devices and Hybrid Systems – W. Guo, Z. Xu, Q. Liu (xiamen University), T. Li (xiamen), F. Zhang, and S. Xie (xiamen University)

Ballroom 6ABC, Washington State Convention Center

H03 Poster Session – 18:00 – 20:00

Co-Chairs: Wenzhuo Wu, Yu-Lin Wang, and Zong-Hong Lin

•	1512	Ionic-Strength Dependence of Electron Mobility of Back-Gate Bilayer MoS ₂ FETs in Aqueous Electrolyte Solutions – M. P. Lu (National Nano Device Labs, Taiwan), Y. T. Chung (Graduate Institute of Opto-Mechatronics, NCCU, Taiwan), and M. Y. Lu (Department of MSE, NTHU, Taiwan)
•	1513	Preparation and Biological Applications of Naphthalimide Benzothiazole As DNA-Targeted Anticancer Agents – X. Li and X. Chen (Dalian University of Technology)
•	1514	Multiplexed CVD Biomarker Detection in Human Serum Using Aptamer Immobilized High Electron Mobility Transistor – T. Y. Tai, A. Sinha, G. B. Lee, and Y. L. Wang (National Tsing Hua University)
•	1515	Heavy Metal Ion Detection from Whole Blood Using Ion Selective FET Sensor – S. L. Wang, R. Sukesan (National Tsing Hua University), C. Y. Hsieh (NTHU), and Y. L. Wang (National Tsing Hua University)

H04 Wearable and Flexible Electronic and Photonic Technologies

Electronics and Photonics / Dielectric Science and Technology / Energy Technology / Physical and Analytical Electrochemistry / Sensor / Interdisciplinary Science and Technology Subcommittee

Room 214, Washington State Convention Center

Session 3 – 08:00 – 12:00

Co-Chairs: Sang-Woo Kim and Yu-Lun Chueh

08:00	1544	<i>(Invited)</i> Energy Harvesting and Storage in 1D Devices – H. Peng (Fudan University)
08:30	1545	<i>(Invited)</i> Enzymatic Bioelectrodes for a Contact Lens Lactate Biofuel Cell: Design and Analysis – R. C. Reid (University of North Texas), S. D. Minter, and B. K. Gale (University of Utah)
09:00	1546	<i>(Invited)</i> Smart Textile for Energy Harvesting and Self-Powered Sensing Applications – Z. H. Lin (National Tsing Hua University)
09:30		Break
10:00	1547	<i>(Invited)</i> Flexible, Foldable and Multi-Functional Paper-Based Electronics – C. H. Lin (King Abdullah University of Science and Technology) and J. H. He (KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY)
10:30	1548	A Wearable All-Solid Photovoltaic Textile – N. Zhang (Chongqing University)
10:50	1549	SrTiO ₃ /ZnO Heterostructure for Transparent and Flexible Photoelectrochemical Water Splitting – P. C. Wang, Y. J. Hsu, and Y. H. Chu (National Chiao Tung University)
11:10	1550	<i>(Invited)</i> Soft Electronic Devices for Noninvasive Health Monitoring: From the Skin to the Deep Tissues – S. Xu (University of California, San Diego)
11:40	1551	Design of Nanostructured Materials for Flexible Photothermal Energy Generation Functionalities – G. W. Ho (National University of Singapore)

Session 4 – 14:00 – 18:00**Co-Chairs: Sheng Xu and Shelley D. Minteer**

- 14:00 **1552** *(Invited)* Printable Two-Dimensional Nanomaterial Inks for Flexible Electronics and Photonics – M. C. Hersam (Northwestern University)
- 14:30 **1553** *(Invited)* Wafer-Scale Synthesis of Monolayer WS₂ By Enhanced Chemical Vapor Deposition for High-Performance Flexible Photodetectors – J. C. Ho (Dept of Materials Science & Engr., City Univ. of Hong Kong, Shenzhen Research Institute, City Univ. of Hong Kong)
- 15:00 **1554** Inertia Based in-Vivo Triboelectric Nanogenerator for Self-Powering Implantable Electronic Devices – H. Ryu (Sungkyunkwan University) and S. W. Kim (Sungkyunkwan University (SKKU))
- 15:20 **1555** *(Invited)* Two-Dimensional Materials for Wearable Electronics – W. Gao (North Carolina State University)
- 15:50 Break
- 16:10 **1556** *(Invited)* Wearable and Flexible Bio-Electronics Enabled By ‘crack’-Driven Transfer Printing Methods – C. H. Lee, M. K. Kim, D. S. Wie, and H. Kim (Purdue University)
- 16:40 **1557** Enhanced Output Performance of P(VDF-TrFE) Based Energy Harvesters with Controlled Dipole Moment of Solvents – J. Kim (Sungkyunkwan University) and S. W. Kim (Sungkyunkwan University (SKKU))
- 17:00 **1558** Stretchable Intrinsically Conductive Polymers for Wearable Thermotherapy and Electromagnetic Interface Shielding – J. Ouyang (National University of Singapore)
- 17:20 **1559** Highly Ion-Conducting, Reversibly Stretchable, and Ultra-Durable Double-Networked Ionogels for Flexible Supercapacitor – H. H. Rana, J. H. Park (Sungkyunkwan University), and H. S. Park (Sungkyunkwan University)
- 17:40 **1560** Electrochemical UV Sensor Using Carbon Quantum Dot/Graphene Semiconductor – Y. Wang, M. Myers, and J. A. Staser (Ohio University)

Ballroom 6ABC, Washington State Convention Center**H04 Poster Session – 18:00 – 20:00**

- **1561** 2D All-Solid-State Fabric Supercapacitor Fabricated Via an All Solution Process for Use in Smart Textiles – Y. Jang, J. Jo, and K. Y. Kim (Korea Institute of Machinery & Materials)
- **1562** Solution-Processed High-k Dielectric Films for Wearable Neuroelectronics – B. S. Yu and T. J. Ha (Kwangwoon University)

103**Oxygen or Hydrogen Evolution Catalysis for Water Electrolysis 4**

Energy Technology / Industrial Electrochemistry and Electrochemical Engineering / Physical and Analytical Electrochemistry
 Room 606, Washington State Convention Center

OER for PEM Electrolysis 2 – 08:15 – 11:40**Co-Chairs: Gang Wu, Jens Oluf Jensen, and Shuai Zhao**

- 08:15 Introductory Remarks
- 08:25 **1663** *(Invited)* How Can We Maintain the Excellent Performance of the PEM Electrolyzer without the Use of Platinum Group Metals? – J. O. Jensen (Technical University of Denmark)
- 08:55 **1664** Synthesis and Evaluation of Iridium Oxide Nanoparticle Catalysts Supported on Nitrogen-Doped Reduced Graphene Oxides – M. Hara, R. Badam, G. J. Wang, H. H. Huang, and M. Yoshimura (Toyota Technological Institute)
- 09:15 **1665** Model-Supported Analysis of Degradation Phenomena of a PEM Water Electrolysis Cell Under Dynamic Operation – S. H. Frensch, S. Simon Araya, A. C. Olesen, and S. K. Kær (Department of Energy Technology, Aalborg University)
- 09:35 **1666** A Novel and Economical Rde-Based Approach for Investigating the Oxidation Evolution Reaction Activity of IrO₂-Based Catalyst Coated Membranes – J. T. H. Kwan (University of British Columbia), M. Kroschel (Technische Universität Berlin), A. Nouri-Khorasani, A. Bonakdarpour (University of British Columbia), P. Strasser (Technische Universität Berlin), and D. P. Wilkinson (University of British Columbia)
- 09:55 **1667** Highly Active and Durable Ir Catalyst for Oxygen Evolution Reaction for Proton Exchange Membrane Electrolysis – H. Xu, L. Yan (Giner, Inc.), S. Zhao (Giner, Inc.), K. L. More (Oak Ridge National Laboratory), and R. Stone (Giner ELX)
- 10:15 Intermission
- 10:30 **1668** Degradation of IrO_x Nanoparticles Supported Onto Sb-Doped SnO₂ Aerogel Monitored By Dynamic Electrochemical Impedance Spectroscopy and Identical-Location TEM – F. Claudel, L. Dubau (CNRS, LEPMI, F-38000 Grenoble, France), S. Sunde (Norwegian University of Science and Technology), G. Ozouf (Univ. Grenoble Alpes, F-38000 Grenoble, CEA), C. Beauger (MINES ParisTech), L. Piccolo (IRCELYON), and F. Maillard (CNRS, LEPMI, F-38000 Grenoble, France)
- 10:50 **1669** Cobalt Platinum Bronze for an Active and Durable Oer Electrocatalyst of PEM Electrolysis without Ir or Ru – Y. Kamitaka and Y. Morimoto (Toyota Central R&D Labs., Inc.)
- 11:10 **1670** *(Invited)* Experimental and Theoretical Approaches to High Performance, Robust HER and Oxygen Evolution Reaction (OER) Electrocatalysts for Proton Exchange Membrane Based Water Electrolysis – P. N. Kumta (University of Pittsburgh)

PEC – 11:40 – 12:00

Co-Chair: Gang Wu

- 11:40 1671 Turnip-Inspired BiVO₄/CuSCN Heterojunction Photoanode for Highly Efficient Photoelectrochemical Water Splitting – T. G. Vo, J. M. Chiu, Y. Tai, and C. Y. Chiang (National Taiwan University of Science and Technology)
- OER in Alkaline Media 1 – 13:45 – 18:10**
Co-Chairs: Gang Wu, Vijay Ramani, and Abel Chuang
- 13:45 Introductory Remarks
13:50 1672 (Invited) Electrocatalyst Development for Solid-State Alkaline Water Electrolyzers: Laboratory through Scale-up – J. Parrondo, C. He (Washington University in St. Louis), G. Wang (Illinois Institute of Technology), C. B. Capuano (Proton OnSite), A. Serov, G. McCool (Pajarito Powder, LLC), B. Zulevi (Pajarito Powder LLC), K. E. Ayers (ProtonOnsite), and V. K. Ramani (Washington University in St. Louis)
- 14:20 1673 Tracking Feni Nanoparticle Surface Inclusions after Electrochemical Aging for the Oxygen Evolution Reaction – A. K. Taylor, M. E. Louie, I. Andreu, M. T. Y. Paul, and B. D. Gates (Simon Fraser University)
- 14:40 1674 Nanostructured Nickel Selenides for High Efficiency Water Oxidation Electrocatalysis – U. De Silva (Missouri University Science & Technology), D. Allada (Missouri University of Science and Technology), J. Masud, and M. Nath (Missouri University of Science & Technology)
- 15:00 1675 Exceptional Electrocatalytic Oxygen Evolution Via Tunable Charge Transfer Interactions in Perovskites and Perovskite Derivatives – R. Forslund (The University of Texas at Austin), W. G. Hardin (Exponent Failure Analysis Associates), K. P. Johnston (University of Texas at Austin), and K. J. Stevenson (Skolkovo Institute of Science and Technology)
- 15:20 Intermission
15:30 1676 (Invited) Operando X-Ray Absorption Investigations into the Oxygen Evolution Activity, Stability, and pH Dependency of Ni_xFe_{1-x}O_y Nanoparticles – D. F. Abbott, E. Fabbri (Electrochemistry Laboratory, Paul Scherrer Institut), M. Borlaf, F. Bozza, T. Graule (Empa, Swiss Federal Laboratories), and T. J. Schmidt (Electrochemistry Laboratory, Paul Scherrer Institute, ETH Zürich)
- 16:00 1677 Understanding and Tailoring the Performance of Transition Metal Oxides for the Oxygen Evolution Reaction – V. Tripkovic, H. A. Hansen, and T. Vegge (Technical University of Denmark)
- 16:20 1678 Investigating Redox States and Reaction Dynamics of Ni-Based Nano-Catalysts for Alkaline Water Splitting – Z. Qiu and T. Edvinsson (Department of Engineering, Solid State Physics, Uppsala University, Sweden)

- 16:40 1679 Non-Precious Electrocatalysts for Anion Exchange Membrane Water Electrolysis Cell – S. M. Choi, W. S. Choi (Korea Institute of Materials and Science), M. H. Seo (Korea Institute of Energy Research), M. J. Jang (University of Science and Technology), Y. S. Park (Korea Institute of Materials and Science), and K. H. Lee (Korea Institute of Materials and Science, University of Science and Technology)

- 17:00 1680 (Invited) Identifying the Forefront of Electrocatalytic Oxygen Evolution Reaction: Electronic Double Layer – G. Li (University of California Merced) and A. Chuang (UC Merced)

- 17:30 1681 Role of Surface Area on the Performance of Iron Nickel Nanoparticles for the Oxygen Evolution Reaction (OER) – P. Acharya, J. Burrow, and L. F. Greenlee (University of Arkansas)

- 17:50 1682 Amorphous Cobalt Phyllosilicate with Layered Crystalline Motifs As Water Oxidation Catalyst – K. Kang, J. S. Kim, I. Park, E. S. Jeong, K. Jin, W. M. Seong (Seoul National University), G. Yoon (Center for nanoparticle research, IBS), H. Kim, and B. Kim (Seoul National University)

104

Materials for Low Temperature Electrochemical Systems 4

Energy Technology / Industrial Electrochemistry and Electrochemical Engineering / Physical and Analytical Electrochemistry
Room 611, Washington State Convention Center

Anion Exchange Membrane Fuel Cell 2 – 08:00 – 10:00

Co-Chairs: William E. Mustain and Adam Z. Weber

- 08:00 1752 Modeling Water Management and Carbon Dioxide Contamination Effects in Anion-Exchange Membrane Fuel Cells – M. R. Gerhardt (Lawrence Berkeley National Laboratory), L. M. Pant (Lawrence Berkeley National Laboratory), and A. Z. Weber (Lawrence Berkeley National Laboratory)
- 08:20 1753 Dimethyl Substituted Polyaromatic Alkaline Ionomers for Better Alkaline Hydrogen Oxidation – E. J. Park, S. Maurya (Los Alamos National Laboratory), C. Bae (Rensselaer Polytechnic Institute), and Y. S. Kim (Los Alamos National Laboratory)
- 08:40 1754 AEMFC Catalyst Layer Engineering to Maximize Water Management and Performance While Reducing PGM Catalyst Loading – T. J. Omasta (University of Connecticut, University of South Carolina), X. Peng, and W. E. Mustain (University of South Carolina)
- 09:00 1755 Determining Electro-Osmotic Drag of Water in Anion Exchange Membrane Fuel Cells – A. L. Roy (University of Tennessee, Knoxville, TN), J. Peng, and T. A. Zawodzinski Jr. (University of Tennessee-Knoxville)
- 09:20 1756 Predicting Electrospun Anion Exchange Membrane Conductivity in the Presence of Carbon Dioxide – J. A. Wrubel, A. A. Peracchio, B. N. Cassenti (University of Connecticut), K. N. Grew (U.S. Army Research Laboratory), and W. K. S. Chiu (University of Connecticut)
- 09:40 Break

Proton Exchange Membrane – 10:00 – 12:40**Co-Chairs: Vito Di Noto and Hyoung-Juhn Kim**

- 10:00 1757 *(Invited)* Self-Humidifying Ultrathin Proton Conductive Membranes for Low Temperature Hydrogen Fuel Cells – P. Gao (Hong Kong University of Science and Technology)
- 10:40 1758 New Ion-Exchange Membranes Derived from Polyketone – V. Di Noto (Dept. Industrial Engineering, University of Padova, Dept. Mat. Science & Engineering, Univ. Carlos III Madrid), G. Nawn (Dept. of Industrial Engineering, University of Padova), K. Vezzù (Dept. of Industrial Engineering, University of Padova, INSTM), F. Bertasi (Dept. of Industrial Engineering, University of Padova), E. Negro (Dept. of Industrial Engineering, University of Padova, Centro Studi “Giorgio Levi Cases”), G. Cavinato (Department of Chemical Sciences - University of Padova), and G. Pace (CNR-ICMATE)
- 11:00 1759 High Performance of a Novel Polymer Electrolyte Fuel Cell with Proton and Hydroxyl Ion Conducting Membranes Under Non-Humidified Condition – J. E. Chae, Y. Na, J. Choi, S. Y. Lee, J. H. Han (Korea Institute of Science and Technology), and H. J. Kim (Korea Institute of Science and Technology (KIST))
- 11:20 1760 Solvation of Perfluorosulfonate Ion Exchange Membrane in Non-Aqueous Solvents – K. Lou (University of Tennessee, Knoxville, TN, Oak Ridge National Laboratory, Oak Ridge, TN), J. Peng (University of Tennessee-Knoxville), Z. Tang (Oak Ridge National Laboratory, Oak Ridge, TN), and T. A. Zawodzinski (University of Tennessee, Knoxville, Oak Ridge National Laboratory)
- 11:40 1761 Reinforced Polymer Electrolyte Membrane Development for Membrane Electrode Assembly of PEMFC – N. Y. Kim, D. H. Lee, E. S. Lee, S. J. Yum, J. Park, and M. S. Lee (Kolon Central Research Park)
- 12:00 1762 Ion Transport in Microphase Separating Polymer Thin Films – Y. Kambe (Argonne National Laboratory, University of Chicago), C. G. Arges (Louisiana State University), B. Dong (University of Chicago, Argonne National Laboratory), D. A. Czaplewski (Argonne National Laboratory), S. N. Patel, and P. F. Nealey (Argonne National Laboratory, University of Chicago)
- 12:20 1763 Monolayer Graphene Based Membrane to Replace Nafion in PEM Fuel Cells – M. Sahoo, M. Perez-page, V. Kalangi, R. R. Nair, and S. Holmes (The University of Manchester)

PEMFC Performance 2 – 14:00 – 15:40**Co-Chair: Vijay Ramani**

- 14:00 1764 Enhance the Performance of PEM Fuel Cell By Incorporating Graphene Based Materials Produced By Electrochemical Exfoliation of Graphite – S. Holmes, M. Perez Page, M. Sahoo, V. Kalangi, and R. R. Nair (The University of Manchester)
- 14:20 1765 Durable MEA with Functionalized Catalysts for PEMFC and Its Development Status for Automotive Application – J. Y. Kim, J. H. Lee, K. Y. Song, and N. W. Kong (KOLON Central Research Park)

- 14:40 1766 Pt Supported on Nb-Doped-TiO₂ As a Highly Selective and Durable Electrocatalyst for PEFC Applications – C. He (Washington University in St. Louis), S. Sankarasubramanian (Washington University in St. Louis), and V. K. Ramani (Washington University in St. Louis)
- 15:00 1767 The Impact of Subsurface and Thin Pt Layer in Nafion Membrane on H₂/O₂ PEM Fuel Cell Performance – L. Daniel, A. Bonakdarpour, and D. P. Wilkinson (University of British Columbia)
- 15:20 Break

Fuel Cell Characterization 1 – 16:00 – 18:00**Co-Chairs: Renate Hiesgen and Iryna V. Zenyuk**

- 16:00 1768 *(Invited)* Direct Observations of Liquid Water Formation at Nano- and Micro-Scale in Platinum Group Metal-Free Electrodes By *Operando* X-Ray Computed Tomography – I. V. Zenyuk (Tufts University)
- 16:40 1769 Structure, Properties, and Degradation of Ultrathin Ionomer Films in Fuel Cell Catalytic Layers – R. Hiesgen, T. Morawietz, M. Handl (University of Applied Sciences Esslingen), C. Oldani (Solvay Specialty Polymers), K. Karan (University of Calgary), and K. A. Friedrich (University of Stuttgart)
- 17:00 1770 Estimation of Cation Contamination Level in Polymer Electrolyte Membrane Fuel Cells By Electrochemical Impedance Spectroscopy – M. Shibata, N. Kitano, A. Shinohara, T. Asaoka (Toyota Central R&D Labs., Inc.), N. Takeuchi, T. Morita, and H. Kumei (Toyota Motor Corporation)
- 17:20 1771 Novel Methodology for Ex-Situ Characterization of Catalysts in Reversal Tolerant PEM-FCs – C. E. Moore (University of British Columbia), J. Eastcott, M. Cimenti, N. Kremliakova (Automotive Fuel Cell Cooperation Corp.), and E. L. Gyenge (University of British Columbia)
- 17:40 1772 Neutron Tomographic Investigation of the Effect of Hydrophobicity Gradients within MPL and MEA on the Spatial Distribution and Transport of Liquid Water in Pemfcs – D. Kartouzian, A. Mohseninia (Zentrum für Sonnenenergie- und Wasserstoff-Forschung), H. Markötter (Helmholtz-Zentrum Berlin), J. Scholta (Zentrum für Sonnenenergie- und Wasserstoff-Forschung), and I. Manke (Helmholtz-Zentrum Berlin)

105 Renewable Fuels via Artificial Photosynthesis or Heterocatalysis 3
 Energy Technology / Organic and Biological
 Electrochemistry / Physical and Analytical Electrochemistry
 Room 612, Washington State Convention Center

Fundamental Study on Photocatalysis – 08:15 – 12:25**Co-Chairs: Frank E. Osterloh and Lionel Vayssieres**

- 08:15 1855 *(Invited)* Integrating Ab-Initio Simulations and Experimental Characterization Methods: Towards Accelerated Chalcopyrite Materials Development for Hydrogen Production – T. Ogitsu, J. Varley (Lawrence Livermore National Laboratory), A. D. DeAngelis, K. Horsley, and N. Gaillard (University of Hawaii)

- 08:40 **1856** *(Invited)* Multi-Scale and Multi-Physics Modeling for Advancing Photoelectrochemical and Photocatalytic Material and Device Research – S. Haussener (EPFL)
- 09:05 **1857** *(Invited)* Latest Advances in Design, Performance, & Stability of Solar Seawater Splitting Materials – L. Vayssieres (IRCRES-Xian Jiaotong University)
- 09:30 Break
- 09:50 **1858** *(Invited)* The Role of Gold Cluster Size and Coverage on Hydrogen Production over TiO₂(110) Single Crystal. An STM and Time Resolved Spectroscopy Study – H. Katsiev (SABIC), G. Harrison (UCL (UK)), P. Maity (KAUST), G. Thornton (UCL (UK)), and H. Idriss (UCL (UK), SABIC)
- 10:15 **1859** *(Invited)* Distinguishing Roles of Gold Nanoparticles in Photocatalysis – N. Wu (West Virginia University)
- 10:40 **1860** *(Invited)* Thermodynamic Aspects of Devices for Solar Energy and Chemical Conversions – F. E. Osterloh (Department of Chemistry, University of California, Davis)
- 11:05 **1861** *(Invited)* Photocatalysis on TiO₂: Insights from Simulations – A. Selloni (Princeton University)
- 11:30 **1862** *(Invited)* Surface Chemistry and Intercalation As Strategies to Tune Reactivity in Colloidal Electrocatalysts – B. Cossairt, D. Henckel, and D. Ung (University of Washington)
- 11:55 **1863** Intrinsic Photoexcited Charge Trapping from Small Polaron Formation in α -Fe₂O₃ – S. K. Cushing, L. M. Carneiro (University of California, Berkeley, Lawrence Berkeley National Lab), H. T. Chang, M. Zuerch (University of California, Berkeley), and S. R. Leone (Lawrence Berkeley National Lab, University of California, Berkeley)
- 12:10 **1864** Decoupling Hydrogen Production and Water Oxidation in a Hybrid Solar-Driven Vanadium Redox Cell Supported By a Bipolar Membrane with Earth-Abundant Catalysts – C. Xiang (Joint Center for Artificial Photosynthesis, Caltech)

Plasmonic Solar Energy Conversion – 14:00 – 18:00

Co-Chairs: Alexander O. Govorov and Jing Zhao

- 14:00 **1865** *(Invited)* Hot-Electron Generation and Energy Transfer in Plasmonic Nanostructures with Hot Spots: Quantum and Classical Mechanisms – A. O. Govorov (Ohio University)
- 14:25 **1866** *(Invited)* Designing Hybrid Nanostructures for Enhancing Photon Harvest in Photocatalysis – D. Ma (Institut National de la Recherche Scientifique (INRS))
- 14:50 **1867** *(Invited)* Efficient Hot Electron Transfer By Plasmon Induced Interfacial Charge Transfer Transistio – T. Lian (Emory University)
- 15:15 **1868** *(Invited)* Maximizing Efficiencies of Photocatalytic Water Splitting By Engineering Interfaces in Multi-Component Photocatalysts – S. Linic (University of Michigan)
- 15:40 Break
- 16:00 **1869** *(Invited)* Artificial Photosynthesis Using Plasmonic Photoanode – T. Oshikiri, R. Takakura, X. Shi, K. Ueno (Hokkaido University), and H. Misawa (National Chiao Tung University, Hokkaido University)

- 16:25 **1870** *(Invited)* Controlled Synthesis of Hollow Bimetallic Nanoparticles As Photo and Electrochemical Catalysts – J. Zhao (University of Connecticut)
- 16:50 **1871** *(Invited)* Nanoscale Design and Modification of Plasmonic Aerogels for Photocatalytic Hydrogen Generation – J. Pietron, P. A. DeSario (U.S. Naval Research Laboratory, Surface Chemistry Branch, Code 6170), C. L. Pitman (NRL/NRC Postdoctoral Associate), T. Brintlinger (U.S. Naval Research Laboratory, Materials & Systems Branch, Code 6369), A. Dunkelberger (U.S. Naval Research Laboratory, Chemical Dynamics & Diagnostics Branch, Code 6110), O. A. Baturina (U.S. Naval Research Laboratory, Center for Corrosion Science & Engineering, Code 6130), R. Stroud (U.S. Naval Research Laboratory, Materials & Systems Branch, Code 6360), J. C. Owrutsky (U.S. Naval Research Laboratory, Chemical Dynamics & Diagnostics Branch, Code 6110), and D. R. Rolison (U.S. Naval Research Laboratory, Surface Chemistry Branch, Code 6170)
- 17:15 **1872** *(Invited)* Ag-TiO₂/TiO_x Nanocomposites for Enhanced Photocatalysis – B. DeLacy, D. Kuhn, and Z. Zander (U.S. Army Edgewood Chemical Biological Center)
- 17:40 **1873** Plasmonic Heterostructure for Full Solar Spectrum Harvesting – Y. Yang (University of Central Florida)

106

Mechano-Electro-Chemical Coupling in Energy Related Materials and Devices 3

High Temperature Materials / Battery / Electrodeposition / Energy Technology
Room 613, Washington State Convention Center

Batteries 1 – 08:00 – 12:00

Co-Chairs: Kejie Zhao, Yue Qi, and D. Noel Buckley

- 08:00 **1945** *(Invited)* Electrochemomechanical Coupling in Functional Oxides for Energy Conversion and Storage Devices – K. J. Van Vliet (Massachusetts Institute of Technology)
- 08:40 **1946** The Coupling between Mechanics and Intercalation Chemistry in Layered Battery Materials – M. Radin, J. Vinckeviciute, J. Kaufman, J. C. Thomas, and A. Van der Ven (University of California, Santa Barbara)
- 09:00 **1947** Mechanical and Structural Degradation of LiNi_xMn_yCo₂O₂ Cathode in Li-Ion Batteries – K. Zhao (Purdue University)
- 09:20 **1948** *(Invited)* Phase Transformation and Chemomechanical Breakdown of Alkali Metal Ion Cathode Materials – F. Lin (Department of Chemistry, Virginia Tech)
- 10:00 Break
- 10:20 **1949** *(Invited)* In Situ Measurement of Mechanical Properties of Solid Electrolyte Interphase (SEI) Layers – I. Yoon (Brown University), S. Jung (University of Rhode Island), D. P. Abraham (Argonne National Lab), B. Lucht (University of Rhode Island), and P. R. Guduru (Brown University)
- 11:00 **1950** Operando Nanoindentation: A Perfect Platform to Measure the Mechanical Properties of Electrodes during Electrochemical Reactions – K. Zhao (Purdue University)

11:20 1951 *(Invited)* In Situ Dealloying of Bulk Mg₂Sn in Mg-Ion Half Cell As an Effective Route to Nanostructured Sn for High Performance Mg-Ion Battery Anodes – H. Yaghoobnejad, J. Fu, H. Kumar, S. S. Welborn, V. B. Shenoy, and E. Detsi (School of Engineering, University of Pennsylvania)

Batteries 2 – 14:00 – 18:00

Co-Chair: Kejie Zhao

14:00 1952 *(Invited)* Strain Engineering for Li and Oxygen Ionic Transport for Solid State Batteries in Energy Storage, Fuel Cells and Memristive Neuromorphic Computing Devices – J. L. M. Rupp (Massachusetts Institute of Technology)

14:40 1953 Mechanical Properties and Microstructure Evolution of Silicon Composite Electrodes – Y. Wang (University of Kentucky), Q. Zhang (General Motors), D. Li (Shanghai University), J. Hu, J. Xu, D. Dang (University of Kentucky), X. Xiao (General Motors, R&D Center), and Y. T. Cheng (University of Kentucky)

15:00 1954 Thermal-Mechanical-Electrochemical Coupling Simulation for Electric Vehicle Batteries – X. Li (Robert Bosch LLC), S. Chumakov (Robert Bosch LLC), J. Christensen (Robert Bosch LLC), X. Zhang, and C. Linder (Stanford University)

15:20 1955 In-Situ Electrochemical Stiffness in Li-ion batteries – A. A. Gewirth (University of Illinois) and K. E. Lundberg (University of Illinois at Urbana-Champaign)

15:40 1956 In Situ Measurement of Strain and Stress Evolution in Lithium Iron Phosphate Electrodes during Electrochemical Cycling – Ö. Ö. Çapraz (University of Illinois at Urbana-Champaign), K. E. Lundberg (University of Illinois), S. R. White (Beckman Institute for Advanced Science and Technology), A. A. Gewirth (University of Illinois), and N. R. Sottos (Beckman Institute for Advanced Science and Technology)

16:00 Break

16:20 1957 *(Invited)* Influence of Mechanical Stress on Lithium Chemical Potential in Lithium Ion Battery Electrodes – K. Ameszawa (Tohoku University), K. Funayama (Tohoku University, Japan), Y. Kimura (Tohoku University), F. Mahunnop (Tohoku University, Japan), T. Nakamura (Tohoku University), N. Kuwata, J. Kawamura (IMRAM, Tohoku University), and T. Kawada (Tohoku University)

17:00 1958 Effect of Electrochemically Induced Fracture and Fatigue on Capacity and Kinetics of Li_xMn₂O₄ – F. P. McGrogan IV, S. R. Bishop, S. Raja, Y. M. Chiang, and K. J. Van Vliet (Massachusetts Institute of Technology)

17:20 1959 Phase-Field Modeling of Solid Electrolyte Interphase (SEI) Cracking in Lithium Batteries – P. Guan and L. Liu (The University of Kansas)

17:40 1960 Modeling Phase Transition in Battery Electrodes Using the Coupled Cahn-Hilliard – Phase Field Crystal Methods – A. Renuka Balakrishna, Y. M. Chiang, and W. C. Carter (Massachusetts Institute of Technology)

Ballroom 6ABC, Washington State Convention Center

I06 Poster Session – 18:00 – 20:00

• 1961 Noble Design for Highly Active and Stable PEM Electrocatalyst Using Synergistic Interaction between Pt, TiO₂ and Carbons – Y. Ji, Y. Jeon, Y. Cho, C. M. Lee (Yonsei University), H. J. Hwang (New energy and battery engineering, Yonsei University), O. Jeon, O. C. Kwon, J. P. Kim, and Y. G. Shul (Yonsei University)

• 1962 4D Structural Characterization of Mechanical Degradation in Reinforced Fuel Cell Membranes Using *in Situ* Visualization – D. Ramani, Y. Singh, R. T. White (Simon Fraser University), T. Haddow (Fuel Cell Research Lab (FCReL), Simon Fraser University), F. P. Orfino (Simon Fraser University), M. Dutta (Ballard Power Systems), and E. Kjeang (Simon Fraser University)

• 1963 Rapid Redox Cycle Stability of Doped CaMnO₃ Particles for High-Temperature Thermochemical Energy Storage – L. Imponenti (Colorado School of Mines), K. J. Albrecht (Colorado School of Mines), and G. S. Jackson (Colorado School of Mines)

• 1964 Considering Realistic Microstructure Heterogeneity: Variational Multiscale Modeling of Li-Ion Batteries – L. Liu and C. Liu (The University of Kansas)

• 1965 Numerical Computation of Central Crack Growth of Active Particle with Multi Influence Factors – Y. Zhang (Shanghai University) and Z. Guo (shanghai University)

• 1966 In Situ Exsolved Core-Shell Nanoparticles on Perovskite Parent: A Novel High-Performance Anode for Solid Oxide Fuel Cells – N. Hou, Y. Zhao, and Y. Li (Tianjin University)

• 1967 Phase-Field Simulation of Stress Evolution in Sodium Ion Battery Electrode Particles – T. Zhang and M. Kamlah (Karlsruhe Institute of Technology)

• 1968 Modeling the Mechano-Chemical Coupling in a Compressed PEMFC MEA with Metallic Bipolar Plates – H. Zhang, L. Xiao (School of Automotive Eng., Wuhan University of Technology), P. C. Sui (School of Automotive Eng., Wuhan University of Technology, IESVic, University of Victoria), and N. Djilali (University of Victoria)

• 1969 Analysis of O₂ Diffusion Resistance without Cathode Humidification in a PEMFC – J. Cho and S. Park (Kwangwoon University)

• 1970 Making Fuel Cells Work- Challenges – N. Rajalakshmi (ARCI)

• 1971 A Redox Fuel Cell Capable of Converting Ethanol to Electricity at a High Power Output – L. An (The Hong Kong Polytechnic University)

• 1972 The Potential of Hybrid Micro/Nanoporous Surface for Biomedical Titanium Implant Applications: Surface Characteristic, Biomechanical Behavior and Hemocompatibility – T. S. Yang, H. H. Chou, K. L. Ou, and P. J. Hou (Taipei Medical University)

- **1973** Nanoporous MnO₂ Nanoflakes Modified Carbon Cloth Material for Efficient Removal of Heavy Metal Ions in Water by Capacitive Deionization – Y. Wang and D. J. Blackwood (National University of Singapore)
- **1974** Hydrothermally Synthesized Anode Material with High Activity and Stability for Direct Methanol Solid Oxide Fuel Cells – X. Yao, Y. Zhao, and Y. Li (Tianjin University)
- **1975** Effects of Surface Modification on the Electrochemical Oxidation Reactivity of Activated Carbon in Direct Carbon Fuel Cells – L. Fan, Y. Zhao, and Y. Li (Tianjin University)
- **1976** Effects of Manganese Oxides on the Activity and Stability of Ni-Ce_{0.8}Sm_{0.2}O_{1.9} Anode for Solid Oxide Fuel Cells with Methanol As the Fuel – T. Gan, Y. Zhao, and Y. Li (Tianjin University)
- **1977** A Study on Performance According to Differential Pressure of 1kW PEMFC Stack for Fuel Cell Vehicles – M. H. Kim, Y. Goo, and S. E. Yoo (KOREA AUTOMOTIVE TECHNOLOGY INSTITUTE)
- **1978** Aramid Nanofiber/Graphene/Carbon Nanotube Composite Electrodes for Structural Energy and Power – A. Patel, J. Harris, and J. Lutkenhaus (Texas A&M University)

- 11:00 **2012** Evaluation of Varying Electrocatalysts for the Intermediate Temperature Electrochemical Synthesis of Ammonia – K. P. Ramaiyan, S. Maurya (Los Alamos National Laboratory), A. D. Benavidez, S. K. Nayak (University of New Mexico), Y. S. Kim (Los Alamos National Laboratory), F. H. Garzon (University of New Mexico), R. Mukundan, and C. R. Kreller (Los Alamos National Laboratory)
- 11:20 **2013** Enhanced Electrochemical Ammonia Production Via Peptide-Bound Metals and Effects on the Hydrogen Evolution Reaction – C. Loney (Case Western Reserve University), D. Suttmiller, P. Acharya (University of Arkansas), S. Maheshwari (Pennsylvania State University), L. Wiles, K. E. Ayers (Proton OnSite), W. L. Gellert (University of Iowa), M. J. Janik (Pennsylvania State University), L. F. Greenlee (University of Arkansas), and J. N. Renner (Case Western Reserve University)
- 11:40 **2014** Catalyst-Free, Electrolytic Synthesis of Ammonia from Nitrogen and Water By Plasma-Produced Solvated Electrons – R. Hawtof, S. Ghosh, C. Xu, J. N. Renner, and R. M. Sankaran (Case Western Reserve University)

Ammonia Synthesis and Oxidation – 14:10 – 16:40
Co-Chairs: Hui Xu and Lauren F. Greenlee

- 14:10 **2015** *(Invited)* The Role of Electrochemistry in Renewable Ammonia Production – K. E. Ayers, W. L. Gellert, and L. Wiles (Proton OnSite)
- 14:40 **2016** *(Invited)* Exceptional Electrocatalytic Oxidations of Small Molecules on Perovskites and Perovskite Derivatives for Advanced Energy Generation and Storage – R. Forslund (The University of Texas at Austin) and K. J. Stevenson (Skolkovo Institute of Science and Technology)
- 15:10 **2017** Synthesis of Pt-M (M=Ir, Pd) Bimetallic Nanocrystals with Controlled Shape and Composition As a High-Performance Electrocatalyst for Ammonia Electrolysis – J. Park (Georgia Institute of Technology), J. Hankinson (Georgia Tech Research Institute), S. W. Lee (Georgia Institute of Technology), and M. Navaei (Georgia Tech Research Institute)
- 15:30 Break
- 16:00 **2018** Ammonia Oxidation Reaction Mechanism on Pt-Ir Alloys: A Surface Enhanced Infrared Absorption Spectroscopy Study – K. Siddharth (THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY) and M. Shao (The Hong Kong University of Science and Technology)
- 16:20 **2019** Noble-Metal-Free Catalysts for Hydrogen Production from Electrolysis of Ammonia – G. Qing and T. Hamann (Michigan State University)

Ballroom 6ABC, Washington State Convention Center

I07 Poster Session – 18:00 – 20:00

- **2020** Ammonia Synthesis from Water and Nitrogen By Electricity Using Ru Catalysts, Hydrogen-Permeable Membranes, and Phosphate Electrolytes at 250°C – K. Imamura and J. Kubota (Fukuoka University)

I07 Energy Conversion Systems Based on Nitrogen Energy Technology
Room 614, Washington State Convention Center

Ammonia Electrosynthesis – 08:00 – 12:00

Co-Chairs: Lauren F. Greenlee, Yuyan Shao, and Gang Wu

- 08:00 **2007** *(Invited)* Electrochemical Synthesis of Ammonia Using Ion Conducting Membranes – F. H. Garzon, S. K. Nayak, A. D. Benavidez (University of New Mexico), C. R. Kreller, K. P. Ramaiyan, S. Maurya, Y. S. Kim, R. Mukundan (Los Alamos National Laboratory), M. Robins, and S. Balagopal (Ceramtec Inc.)
- 08:30 **2008** *(Invited)* Electrochemical Ammonia Synthesis Using Intermediate Temperature Proton Conducting Membranes – C. R. Kreller, K. P. Ramaiyan, S. Maurya, N. Parker, R. Mukundan, Y. S. Kim (Los Alamos National Laboratory), and F. H. Garzon (University of New Mexico)
- 09:00 **2009** *(Invited)* Partially Reduced Metal Oxide Supported Ni-Fe Electrocatalyst for N₂ Reduction to NH₃ at Ambient Conditions – L. Xin, Y. Qiu (Iowa State University), S. Gu (Wichita State University), and W. Li (Iowa State University)
- 09:30 Break
- 10:00 **2010** Electrochemical Ammonia Synthesis in Organic Electrolytes – J. Schwalbe, A. R. Singh, A. C. Nielander (Stanford University), J. M. McEnaney (Stanford University Department of Chemical Engineering), T. F. Jaramillo, J. Nørskov, and M. Cargnello (Stanford University)
- 10:30 **2011** *(Invited)* Advanced Components Development for Electrochemical Ammonia Synthesis – H. Xu (Giner, Inc.), S. Zhao (University of Connecticut), M. J. Bidy (NREL), Y. Yan (University of Delaware), and G. Wu (University at Buffalo, the State University of New York)

K01**13th Manual M. Baizer Memorial Symposium on Organic Electrochemistry**Organic and Biological Electrochemistry
Room 616, Washington State Convention Center**Baizer Memorial Symposium Session 3 – 08:00 – 12:00**

Co-Chairs: Kevin D. Moeller and Dennis G. Peters

- 08:00 **2040** Metal- and Reagent-Free Anodic Dehydrogenative Coupling Reactions – S. R. Waldvogel (Johannes Gutenberg University Mainz)
- 08:20 **2041** No-Carrier-Added Electrochemical Radio-Fluorination of Thioethers – M. Balandeh, N. Allison, C. Waldmann, A. Gomez, and S. Sadeghi (Pharmacology, University of California, Los Angeles)
- 08:40 **2042** Anodic Thiocyanation of Alkenes in Formic Acid – J. Y. Becker (Ben-Gurion University of the Negev) and A. Gitkis (Teva Pharmaceutical Co)
- 09:00 **2043** Electrochemical Synthesis of Azanucleosides – K. Okamoto, S. Ishii, T. Shoji, and K. Chiba (Tokyo University of Agriculture and Technology)
- 09:20 **2044** Application of the Cation Pool Method for Fluorination and No-Carrier-Added Radio-Fluorination – M. Balandeh, A. Rios, N. Allison, D. Shirazi, and S. Sadeghi (Pharmacology, University of California, Los Angeles)
- 09:40 Break
- 10:00 **2045** Electrosynthesis of 2,1-Benzisoxazole from o-Nitrobenzaldehyde – S. Hosseini (Indiana University) and D. G. Peters (Indiana University)
- 10:20 **2046** Highly Stereoselective Electrocatalytic Semihydrogenation of Alkynes to Z-Alkenes Using a Proton Exchange Membrane Reactor – M. Atobe, J. Minoshima, A. Fukazawa (Yokohama National University), Y. Hashimoto, Y. Kobori, and Y. Sato (JXTG Nippon Oil & Energy Co.)
- 10:40 **2047** Electrocatalytic Hydrogenation of Toluene in a PEM Reactor As a Study of a Model Reaction for Hydrogen Storage – A. Fukazawa, K. Takano (Yokohama National University), Y. Matsumura (Yamagata University), K. Nagasawa (Green Hydrogen Research Center, Yokohama Nat. Univ.), S. Mitsushima, and M. Atobe (Yokohama National University)
- 11:00 **2048** Electrochemical Functionalization of Methylarenes Initiated By Hydrogen Atom Transfer and Comparison to Electron-Transfer-Initiated Functionalization – M. Rafiee (University of Wisconsin-Madison) and S. S. Stahl (University of Wisconsin - Madison)
- 11:20 **2049** Umpolung Diels-Alder Reactions By Electrocatalysis – Y. Okada, A. Ozaki, Y. Yamaguchi, and K. Chiba (Tokyo University of Agriculture and Technology)
- 11:40 **2050** Paired Electrolysis for Amide Formation Catalyzed By Vitamin B₁₂ Model Complex Under Aerobic Condition – H. Shimakoshi (Kyushu University), L. Zhongli (Kyushu University), and Y. Hisaeda (Kyushu University)

K03**Oxidation and Reduction: Exploring Electron Transfer Reactions in Chemistry and Biology**Organic and Biological Electrochemistry / Physical and Analytical Electrochemistry
Room 616, Washington State Convention Center**Nature-Inspired Electrochemical Systems – 13:00 – 17:20**

Co-Chairs: James D. Burgess, William E. Mustain, Shelley D. Minteer, and Florika C. Macazo

- 13:00 **2051** Microelectrode Glucose Detection at the Human Mucosa – J. D. Burgess (Augusta University), L. Li (Augusta State University), T. Kelley (Case Western Reserve University), and M. Shin (Georgia Southern University)
- 13:20 **2052** Mechanistic Studies of Protein-Based, Metal Nanoparticle Biosynthesis – F. C. Macazo and S. D. Minteer (University of Utah)
- 13:40 Break 1
- 14:00 **2053** Photo-Bioelectrochemistry of Cyanobacteria Lacking Respiratory Terminal Oxidases – B. Suganthan, N. Sekar, and R. P. Ramasamy (School of Chemical, Materials and Biomedical Engineering, Nano Electrochemistry Laboratory, University of Georgia)
- 14:20 **2054** Controlled Interactions between Engineered Proteins and Acidic Polymer Electrolytes – Z. Su (Case Western Reserve University), S. T. Waston (University of Arkansas), and J. N. Renner (Case Western Reserve University)
- 14:40 **2055** SPM Imaging of DNA, Redox Proteins and Bacteria Spores Under in-Situ Conditions – B. Zhang, J. Gu (Newcastle University), and U. Stimming (Technische Universität München, Newcastle University)
- 15:00 Break 2
- 15:20 **2056** Eradication of *Candida Albicans* Biofilm By Electrochemical Scaffold Producing Hypochlorous Acid – H. M. Zmuda, M. M. Kiamco, A. Mohamed (Washington State University), R. Patel (Mayo Clinic), and H. Beyenal (Washington State University)
- 15:40 **2057** Modeling Hypochlorous Acid Generation on Carbon Fabric Surface – A. Ben Sahil and H. Beyenal (Washington State University)
- 16:00 **2058** Improved Photosynthetic Currents from RuO₂ Nanosheet Deposited Electrodes – H. Hong (Yonsei University), J. M. Lee, S. J. Hwang (Ewha Womans University), and W. Ryu (Yonsei University)
- 16:20 Break 3
- 16:40 **2059** Optically Guided Directional Electrodeposition of Semiconductors Mimicking Natural Phototropism – M. C. Meier, A. I. Carim, K. R. Hamann, J. R. Thompson, H. A. Atwater, and N. S. Lewis (California Institute of Technology)
- 17:00 **2060** Bioinspired Electrochemical Mesoporous Membrane Platform Enabling Continuous Protein Separation – D. E. Shea and B. J. Hinds (Univ. of Washington)

Physical and Analytical Electrochemistry, Electrocatalysis, and Photoelectrochemistry General Session

Physical and Analytical Electrochemistry
Room 620, Washington State Convention Center

Physical and Analytical General Session 3 – 08:00 – 12:00

Co-Chairs: Burton H. Simpson and Sergey Shilov

- 08:00 2114 The Micro-Optical Ring Electrode: A Sensor for Multiple Actinide Ions Monitoring – G. Linnett (Lancaster University)
- 08:20 2115 Non – Linear Electrochemical Impedance Spectroscopic Analysis of Instabilities in Electrochemical Systems – R. Pachimatla (Indian Institute of Technology Madras) and R. Srinivasan (Indian Institute of Technology, Madras)
- 08:40 2116 THz SERS Observation of Benzenethiol Monolayers on Electrode Surfaces – K. Ikeda (Nagoya Institute of Technology)
- 09:00 2117 A Modular Flow-through Platform for Spectroelectrochemical Analysis – T. Noyhouzer, M. E. Snowden, U. M. Tefashe, and J. Mauzeroll (McGill University)
- 09:20 Break
- 09:40 2118 Surface Oxidation of Pt(111) Studied By Surface X-Ray Diffraction and Grazing-Incidence Small-Angle X-Ray Scattering – M. Ruge, B. Rahn, F. Reikowski (Kiel University), F. Carlà, R. Felici (European Synchrotron Radiation Facility), J. Stettner (Kiel University), J. Drnec (European Synchrotron Radiation Facility), O. M. Magnussen (Kiel University), and D. A. Harrington (University of Victoria)
- 10:00 2119 Surface-Enhanced Raman Spectroelectrochemistry with Screen-Printed Electrodes for Quantitative Analysis – P. Fanjul Bolado, D. Martín Yerga, A. Junquera Pérez, M. B. González García, and D. Hernández Santos (DROPSSENS)
- 10:20 2120 Study on the Structure of the Electrical Double Layer Formed in Ionic Liquids Using Neutron Reflectivity – K. Tamura (Japan Atomic Energy Agency) and K. Akutsu (CROSS Tokai)
- 10:40 2121 FTIR Spectroelectrochemistry: Optimization of Experimental Setup – S. Shilov and M. Kessler (Bruker Optics)
- 11:00 2122 Benchtop, High-Resolution XAFS and Xes Spectrometers As Tools for Electrochemical Research – E. Jahrman, W. Holden, G. T. Seidler (University of Washington), and T. T. Fister (Chemical Sciences and Engineering Division)
- 11:20 2123 Probing Photoelectrochemical Performance and Corrosion at the Nanoscale with Electrochemical Scanning Probe Techniques – B. H. Simpson, M. Mazza, W. Yu, and N. S. Lewis (California Institute of Technology)
- 11:40 2124 Dynamic Nanostructuring as a Tool to Fabricate High Performance Copper Based Hydrogen Evolution Electrocatalyst – L. Manna, D. Shinde, and L. De Trizio (Italian Institute of Technology)

Electrochemically Assisted Fluorescence – 14:00 – 17:00

Co-Chairs: David E. Cliffel and Bo Zhang

- 14:00 2125 Single Nanosheet Photoelectrochemistry – J. Sambur (Colorado State University)
- 14:20 2126 Luminescence Studies of Single Molecule Electron Transfer Events – D. Han, K. Fu, G. Crouch, S. R. Kwon, and P. W. Bohn (University of Notre Dame)
- 14:40 2127 Study of Redox Activities of Single Bodipy Molecules and Plasmonic Nanoparticle Using Spectroelectrochemistry Methods – S. Pan (The University of Alabama)
- 15:00 2128 Chemical Imaging of Single-Particle Photoelectrocatalysis for Energy Conversion – X. Mao, M. Hesari, N. Zou, and P. Chen (Cornell University)
- 15:20 2129 Shedding Light on Single Nanoparticle Electrochemistry: Combined Optical and Electroanalytical Methods for Correlating Structure and Reactivity – C. M. Hill, P. Saha, and J. Walmsley (University of Wyoming)
- 15:40 2130 Inside the Reaction Layer: Investigation of Electrochemical Reactions By Coupling Electrochemistry and Confocal Fluorescence Microscopy – T. Doneux (Université libre de Bruxelles), A. de Poulpique (Univ. Marseille), I. B. Arredondo (Institut. Potosino Investigacion Cientifica y Tecnologica), P. Lefrançois, V. S. R. Vajrала, B. Goudeau, P. Garrigue, N. Sojic, S. Arbault, and L. Bouffier (Univ. Bordeaux)
- 16:00 2131 Fluorescent Readouts of Spectroscopically-Silent Reactions on Single Metal Nanoparticle Electrodes – K. Willets (Temple University)
- 16:20 2132 Detection of Reactive Oxygen Species in AEM Fuel Cells Using *in Situ* Fluorescence Spectroscopy – Y. Zhang, J. Parrondo (Washington University in St. Louis), S. Sankarasubramanian (Washington University in St. Louis), and V. Ramani (Washington University in St. Louis)
- 16:40 2133 Optimizing Surface Modifications for Quantum Dot Labelled DNA SAMs Using Electrochemistry Coupled Fluorescence Imaging – R. Sundar (University of British Columbia, Vancouver) and D. Bizzotto (University of British Columbia)

Electrocatalysis 9: Symposium in Honor of Radoslav Adzic

Physical and Analytical Electrochemistry / Electrodeposition / Energy Technology

Room 603, Washington State Convention Center

Oxygen Reduction Reaction 1 – 08:00 – 12:00

Co-Chairs: Junliang Zhang and Yang Shao-Horn

- 08:00 2175 (*Keynote*) Correlating Fundamental Properties of Materials to Fuel Cell Catalysts – P. P. Lopes (Argonne National Laboratory), D. Strmcnik, N. M. Markovic, and V. Stamenkovic (Argonne National Laboratory)
- 08:40 2176 (*Invited*) Retrospective on Oxygen Reduction Electrocatalyst R&D Supported By the U.S. Department of Energy – N. L. Garland (U.S. Department of Energy)
- 09:00 2177 (*Invited*) Pathways Towards Enabling Platinum for Oxygen Reduction Reaction – S. Mukerjee and Q. Jia (Northeastern University)
- 09:20 2178 (*Invited*) Platinum Nanotubes and Platinum Thin Layers on Nanowires As Electrocatalysts – Y. Yan (University of Delaware)

- 09:40 Break
10:00 **2179** *(Invited)* Instability of Pt-Based Catalysts for Fuel Cell Applications – Y. Shao-Horn (Massachusetts Institute of Technology)
- 10:20 **2180** *(Invited)* Low-Pt Catalyst Concepts for the Electrochemical Oxygen Reduction Reaction – P. Strasser (Technical University Berlin)
- 10:40 **2181** *(Invited)* Design of Electrocatalysts with Ad-Atoms, Single Crystals and Supported Nanoparticles for the Applications to Fuel Cells – M. Watanabe (Fuel Cell Nanomaterials Center, University of Yamanashi)
- 11:00 **2182** *(Invited)* Oxygen Reactions at Poly and Single Crystalline Electrodes in a Sodium-Ion Containing Aprotic Solvent – L. J. Hardwick, R. Nichols, G. Attard, T. Galloway, N. Berry (University of Liverpool), V. Padmanabhan (University of Southampton), J. F. Li, and J. C. Dong (Xiamen University)
- 11:20 **2183** *(Invited)* Controlled Synthesis of the Ultra-Low-Platinum Electrocatalysts for High-Performance Polymer Electrolyte Membrane Fuel Cell (PEMFC) Cathode – J. Zhang (Shanghai Jiao Tong University), L. Luo, R. Tian (Institute of Fuel Cells, Shanghai Jiao Tong University), C. Wang (Institute of Fuel Cells, Shanghai Jiao Tong University), X. Cheng (Institute of Fuel Cells, Shanghai Jiao Tong University), G. Wei (SJTU-ParisTech Elite Institute of Technology, SJTU), and S. Shen (Institute of Fuel Cells, Shanghai Jiao Tong University)
- 11:40 **2184** Oxygen Reduction on Gold Nanocrystal Surfaces in Alkaline Electrolyte: Effects of Surface Proton Transfer – Y. Zhang, F. Lu, S. Liu, D. Lu, D. Su, M. Liu, Y. Zhang, P. Liu, J. X. Wang (Brookhaven National Laboratory), R. R. Adzic (Chemistry Department, Brookhaven National Laboratory), and O. Gang (Brookhaven National Laboratory, Columbia University)
- 16:00 **2189** *(Invited)* Combination of Insulating Boron Nitride and Inert Gold Substrate As an Efficient Electrocatalysts for Oxygen Reduction Reaction and Hydrogen Evolution Reaction - Theoretical and Experimental Investigations – K. Uosaki, H. C. Dinh (National Institute for Materials Science), H. Noguchi (Hokkaido University, National Institute for Materials Science), G. Elumalai, A. Lyalin (National Institute for Materials Science), and T. Taketsugu (National Institute for Materials Science, Hokkaido University)
- 16:20 **2190** *(Invited)* Effect of the Carbon Matrix Surface Area and Thermal Treatment on the Activity and Durability of Fe-N-C Oxygen Reduction Catalysts – F. H. B. Lima (IQSC - Institute of Chemistry of Sao Carlos) and N. A. Galiole (Institute of Chemistry of Sao Carlos)
- 16:40 **2191** *(Invited)* Active Carbon Supports for Pt Cathode Catalysts in PEM Fuel Cells – M. Chen, X. Wang (University at Buffalo), and G. Wu (University at Buffalo, the State University of New York)
- 17:00 **2192** *(Invited)* Development of Highly Active and Durable Hybrid Compressive Platinum Lattice Cathode Catalyst for Polymer Electrolyte Membrane (PEM) Fuel Cells at USC – B. N. Popov (University of South Carolina), T. Kim (Chungnam National University), and W. S. Jung (University of South Carolina)
- 17:20 **2193** *(Invited)* Metal Oxide Nanocoating As Electrocatalyst Support, and More – Y. Xing (University of Missouri)
- 17:40 **2194** *(Invited)* Fabrication and Operation Under the Same Conditions: Oxygen Reduction on Cathodically Deposited Manganese Oxide – L. V. Pugolovkin, E. E. Levin (Moscow State University), E. R. Savinova (UMR 7515-CNRS-University of Strasbourg), and G. A. Tsirlina (Moscow State University)

Oxygen Reduction Reaction 2 – 14:00 – 18:00**Co-Chairs: Piotr Zelenay and Jose H. Zagal**

- 14:00 **2185** *(Keynote)* The Progress and Challenges in Oxygen Reduction Electrocatalysis without Precious Metals – P. Zelenay (Los Alamos National Laboratory)
- 14:40 **2186** *(Invited)* Controlling the ORR with Proton Kinetics and Non-Precious Metal Catalysts – A. A. Gewirth (University of Illinois)
- 15:00 **2187** *(Invited)* Climbing over the Volcano Correlation for O₂ Reduction By the Effect of a Pyridine Axial Ligand Bound to Co Phthalocyanine Compared to Vitamin B12. 4 Versus 2 Electron Reduction of O₂ – J. H. Zagal (University of Santiago de Chile), F. Tasca, K. Neira, J. Riquelme, P. Hermosilla, D. Venegas (Universidad de Santiago de Chile), and W. Orellana (Universidad Andres Bello)
- 15:20 **2188** *(Invited)* Hollow Doped Carbon Nanopolyhedra with Exclusive Fe-N_x Active Sites As Advanced Cathode Catalyst Achieving Ultra High Polymer Electrolyte Membrane Fuel Cells Performance – S. Liao (School of Chemistry and Chemical Engineering)
- 15:40 Break

L04 Charge Transfer: Electrons, Protons, and Other Ions 3**Physical and Analytical Electrochemistry / Energy Technology Room 617, Washington State Convention Center****Charge Transfer: Protons 1 – 08:40 – 10:00****Co-Chair: Stephen J. Paddison**

- 08:40 **2284** *(Invited)* Mechanistic Details of Protonic Solar Cells Formed Via Covalent Modification of Passive Ion-Exchange Membranes with Photoacid Dye Molecules – W. White, C. D. Sanborn (University of California, Irvine), E. Schwartz, S. Luo (University of California, Irvine), D. M. Fabian, L. A. Renna, and S. Ardo (University of California, Irvine)
- 09:20 **2285** Effect of Inorganic Nano Fillers on Alkaline Polymer Electrolytes – J. Li and K. Lian (University of Toronto)
- 09:40 Break

Charge Transfer: Li and Other Ions 2 – 10:00 – 12:20**Co-Chairs: Stephen J. Paddison and Andrew M. Herring**

- 10:00 **2286** *(Invited)* Recent Progress in Understanding Battery Electrolyte Electrochemical Stability and Its Relationship with Electrolyte Structural Properties – O. Borodin, J. Vatamanu (U.S. Army Research Laboratory), M. Olguin (Army Research Laboratory), T. Pollard, C. Eisner, K. Leiter, and J. Knap (US Army Research Laboratory)

- 10:40 **2287** Towards Identifying the Active Sites on Oriented Ruthenium Dioxide Surfaces in Catalyzing Oxygen Evolution – R. R. Rao, M. J. Kolb (Massachusetts Institute of Technology), N. Halck (Technical University of Denmark), J. Hwang (Massachusetts Institute of Technology), A. F. Pedersen (Technical University of Denmark), A. Mehta (SLAC National Accelerator Laboratory), H. You (Argonne National Laboratory), J. Corchado-Garcia (Massachusetts Institute of Technology), H. A. Hansen (Stanford University), Z. Feng (Oregon State University), H. Zhou (Argonne National Laboratory), J. Rossmeisl (University of Copenhagen), T. Vegge, I. Chorkendorff (Technical University of Denmark), I. Stephens (Imperial College London), and Y. Shao-Horn (Massachusetts Institute of Technology)
- 11:00 **2288** *(Invited)* Insights from Computational Modeling and Experiments on the Li-Ion Dynamics and Electrochemical Stability of Garnet-Based Solid Electrolytes – R. Jalem (National Institute for Materials Science (NIMS), Japan, Japan Science and Technology Agency, PRESTO)
- 11:40 **2289** Electrical Response of a New Lipophilic Ionic Liquid and the Effect of CO₂ on Its Conductivity Mechanism – F. Bertasi (Dept. of Industrial Engineering, University of Padova, Centro Studi “Giorgio Levi Cases”), K. Vezzù (Dept. of Industrial Engineering, University of Padova, INSTM), G. Pagot (Dept. of Industrial Engineering, University of Padova, Centro Studi “Giorgio Levi Cases”), G. Pace (CNR-ICMATE), E. Negro (Dept. of Industrial Engineering, University of Padova, Centro Studi “Giorgio Levi Cases”), Y. Abulebdeh (National Research Council Canada), M. Armand (CIC EnergiGUNE), and V. Di Noto (Dept. Mat. Science & Engineering, Univ. Carlos III Madrid, Dept. Industrial Engineering, University of Padova)
- 12:00 **2290** Charge Transfer across the n-Gallium Phosphide(100) Photoanode/Electrolyte Interface during Photoelectrochemical Water Splitting – W. Saddique, G. Lilienkamp, and W. Daum (IEPT, TU Clausthal)

Charge Transfer: Protons 2 – 14:00 – 16:00

Co-Chair: Andrew M. Herring

- 14:00 **2291** *(Invited)* Proton Transport in Metal-Organic Frameworks – F. Paesani (University of California, San Diego)
- 14:40 **2292** Charge Transfer Characteristics of Diaza-Anthraquinones in Different Solvents and Their Application As Organic Active Material in Redox Flow Batteries – J. D. Hofmann, J. Janek (Justus-Liebig-Universität Giessen), and D. Schröder (Justus-Liebig-Universität Giessen, Germany)
- 15:00 **2293** The Ionic and Water Transport Properties Studies of Univalent Ion Exchanged Perfluorosulfonate Membrane – J. Peng (University of Tennessee-Knoxville), G. A. Goenaga (University of Tennessee Knoxville), and T. A. Zawodzinski (University of Tennessee, Knoxville)
- 15:20 Break

Charge Transfer: Li and Other Ions 3 – 16:00 – 17:40

Co-Chairs: Stephen J. Paddison and Vito Di Noto

- 16:00 **2294** *(Invited)* Ionic Charge Separation at the Electrode Interface – J. Kattirtzi (Xiamen University), D. Limmer (University of California, Berkeley), and A. P. Willard (Massachusetts Institute of Technology)
- 16:40 **2295** Thin Film Ion Transport and Morphology of Poly(ethylene oxide) and Lithium Salt Mixtures – B. Dong (University of Chicago), Y. Kambe, M. Dolejsi, P. F. Nealey (Argonne National Laboratory, University of Chicago), and S. N. Patel (University of Chicago, Argonne National Laboratory)
- 17:00 **2296** *(Invited)* Lithium Ion Conductors – between Model Systems and Battery Materials – P. Heitjans (Inst. of Physical Chemistry, Leibniz University Hannover)

L05

Oxygen Reduction Reactions

Physical and Analytical Electrochemistry / Energy Technology
Room 602, Washington State Convention Center

Oxygen Reduction Reactions 4 – 08:00 – 10:00

Co-Chairs: Hiroyuki Uchida and Piotr Zelenay

- 08:00 **2310** *(Invited)* Structural and Mechanistic Basis for the Oxygen Reduction Activity of Pyrolyzed Fe-N-C Electrocatalysts – S. Mukerjee and Q. Jia (Northeastern University)
- 08:30 **2311** *(Invited)* Platinum Group Metal-Free Oxygen Reduction Electrocatalysts: Structure-to-Property Relationships and Design Directions – P. Atanassov, K. Artyushkova, and I. Matanovic (University of New Mexico)
- 09:00 **2312** *(Invited)* Preparation and Active Sites of Pyrolyzed Fe/N/C Non-Precious Metal Catalysts for Oxygen Reduction Reaction – Z. Y. Zhou (Xiamen University), Y. C. Wang (Chem. Depart., Xiamen University), X. D. Yang (Xiamen University), C. Chen (East China University of Science and Technology), and S. G. Sun (Department of Chemistry, Xiamen University)
- 09:30 Break

Oxygen Reduction Reactions 5 – 10:00 – 12:00

Co-Chairs: Plamen Atanassov, Sanjeev Mukerjee, and Galina A. Tsirlina

- 10:00 **2313** *(Invited)* Kinetic Insight into the Degradation Mechanism of PGM-Free ORR Catalysts – X. Yin, U. Martinez, S. Komini Babu, H. T. Chung, G. M. Purdy, and P. Zelenay (Los Alamos National Laboratory)
- 10:30 **2314** *(Invited)* Stability of Palladium Electrocatalysts in Alkaline Solutions – S. JIA (Hong Kong University of Science and Technology) and M. Shao (The Hong Kong University of Science and Technology)
- 11:00 **2315** Transition Metal and Nitrogen Co-Doped Carbide-Derived Carbon Catalysts for Oxygen Reduction Reaction in Alkaline Direct Methanol Fuel Cell – S. Ratso, I. Kruusenberg, M. Käärik (Institute of Chemistry, University of Tartu), M. Kook, R. Saar (Institute of Physics, University of Tartu), P. Kanninen, T. Kallio (Department of Chemistry, Aalto University), J. Leis, and K. Tammeveski (Institute of Chemistry, University of Tartu)

- 11:20 **2316** Studies of the Oxygen Reduction Reaction of Pt Single Crystals Alloys in Alkaline Media – K. D. Jensen, L. Arnarson, J. Rossmeisl (University of Copenhagen), I. Chorkendorff (Technical University of Denmark), M. Escudero-Escribano (University of Copenhagen), and I. Stephens (Imperial College London)
- 11:40 **2317** Catalyst Design for Oxygen Reduction Reaction Using Pyridinic Nitrogen-Doped Carbon Materials – T. Kondo and J. Nakamura (University of Tsukuba)

Oxygen Reduction Reactions 6 – 14:00 – 16:00
Co-Chairs: Piotr Zelenay and Sylwia Zoladek

- 14:00 **2318** *(Invited)* Influence of the Crystal Structure of Manganese Oxides on the ORR Kinetics: A Combined Experimental and Computational Study – A. S. Ryabova (Moscow State University), A. Bonnefont (Institut de Chimie, CNRS/Université de Strasbourg), V. A. Nikitina (Moscow State University), R. R. Nazmutdinov (Kazan National Research Technological University), E. R. Savinova (UMR 7515-CNRS-University of Strasbourg), and G. A. Tsirlina (Moscow State University)
- 14:30 **2319** Operando Determination of Oxygen Reduction Reaction Kinetics on PGM-Free Electrocatalysts in a PEFC – L. Osmieri (National Renewable Energy Laboratory), X. Wang, F. Cetinbas (Argonne National Laboratory), H. T. Chung, X. Yin (Los Alamos National Laboratory), S. Kabir (National Renewable Energy Laboratory), D. J. Myers (Argonne National Laboratory), P. Zelenay (Los Alamos National Laboratory), R. Ahluwalia (Argonne National Laboratory), and K. C. Neyerlin (National Renewable Energy Laboratory)
- 14:50 **2320** Long-Term Oxygen Reduction Reaction Activity of Surface Modified Cathode Materials for Solid Oxide Fuel Cells – Y. Lin (U.S. DOE, National Energy Technology Laboratory), S. Lee (AECOM, U.S. DOE, National Energy Technology Laboratory), H. Abernathy (AECOM, U.S. DOE National Energy Technology Laboratory), T. Yang, and G. A. Hackett (U.S. DOE National Energy Technology Laboratory)
- 15:10 **2321** Simultaneous Optical Transmission Relaxation and Impedance Spectroscopy Measurements of Thin Film Oxygen Surface Exchange Kinetics – N. H. Perry (wpi-I2CNER, Kyushu University, Department of Materials Science and Engineering, UIUC), J. J. Kim (Argonne National Laboratory), and H. L. Tuller (I2CNER, Kyushu University, Department of Materials Science and Engineering, MIT)
- 15:30 Break

Oxygen Reduction Reactions 7 – 16:00 – 18:40
Co-Chairs: Enrique Herrero, Deborah J. Myers, and Helmut Baltruschat

- 16:00 **2322** Mechanistic Insights into Oxygen Reduction Reactions in Non-Aqueous Metal-Air Batteries – S. H. Rawal, W. C. McKee, and Y. Xu (Louisiana State University)

- 16:20 **2323** Influence of Perfluorinated Additives on ORR and Performance of High Temperature PEM Fuel Cells – A. Poozhikunnath, H. Yu (University of Connecticut, Center for Clean Energy Engineering), L. J. Bonville (Center for Clean Energy Engineering), and R. Maric (Center for Clean Energy Engineering, University of Connecticut)
- 16:40 **2324** Ligand-Regulated ORR Activity of Au Nanoparticles in Alkaline Medium: The Importance of Surface Coverage of Ligands – L. Lu (Department of Chemistry, Zhejiang University)
- 17:00 **2325** Development of Nanostructured-Carbon-Supported Gold Nanoparticles As Catalysts for Electroreduction of Oxygen and Carbon Dioxide – S. Zoladek, M. Blicharska, I. A. Rutkowska, and P. J. Kulesza (University of Warsaw)
- 17:20 **2326** In Situ Investigation of Au-Cu₂O Core-Shell Nanoparticles Formation By Liquid Cell TEM – F. C. Chen, Y. H. Lin, J. Y. Chen (Dep. Mater. Sci. and Eng., National Chiao Tung University), and W. W. Wu (Dep. of Materials Science and Engineering, NCTU)
- 17:40 **2327** 3D-Nanorod Fenton-like CuO/TiO₂ Photocatalyst By Electrodeposition in AAO Template for Dye Degradation – L. H. Yang, Y. J. Wang, Y. L. Chueh, and L. J. Chen (Department of Materials Science and Engineering, NTHU)
- 18:00 **2328** Understanding the Activation and Stabilization of Electrocatalytic Single Atom Catalysts – G. Wan (Shanghai institute of Ceramics, Materials Science Division, Argonne National Laboratory), H. Chen (Shanghai institute of Ceramics), T. Li (Advanced Photon Source, Argonne National Laboratory), H. Zhou (Argonne National Laboratory), and J. Shi (Shanghai institute of Ceramics)
- 18:20 **2329** Perovskite Oxide Nanoparticles As High Performance Bifunctional Catalyst – W. Xu, L. Yan, M. Zhou, and H. Luo (New Mexico State University)

LOG Nanoporous Materials
Physical and Analytical Electrochemistry / Energy Technology
Room 615, Washington State Convention Center

Nanoporous Carbons 1 – 08:00 – 10:00
Co-Chair: Kunal Karan

- 08:00 **2384** *(Invited)* Ordered, Nanoporous Carbon Scaffolds (NCS) for Use in Energy Conversion and Related Applications – V. Birss, X. Li, M. Atwa, R. M. Mayall, C. Ai, and E. N. El Sawy (Department of Chemistry, University of Calgary)
- 08:40 **2385** Hidden Features: Characterizing Carbon Electrodes in Low Ionic Strength Electrolytes for Capacitive Desalination Applications – S. A. Hawks, A. Fisher, J. M. Knipe, P. G. Campbell, and M. Stadermann (Lawrence Livermore National Laboratory)

- 09:00 **2386** A Nano-Carbon Scaffold (NCS) Electrode for the Vanadium Redox Flow Battery – J. Li, D. Fofana (University of Calgary), X. Li (Department of Chemistry, University of Calgary), E. El-Sawy (University of Calgary), V. Birss (Department of Chemistry, University of Calgary), F. Shakeri Hosseinabad, S. Maslovara, and E. P. L. Roberts (University of Calgary)
- 09:20 **2387** Investigation of Nanoporous Carbon Scaffold with Ordered Pore Structure As Microporous Layer for PEM Fuel Cells – M. N. Islam (University of Calgary), M. Atwa, X. Li (Department of Chemistry, University of Calgary), F. Forouzandeh, U. Shrivastava (University of Calgary), V. Birss (Department of Chemistry, University of Calgary), and K. Karan (University of Calgary)
- 09:40 Break

Nanoporous Carbons 2 – 10:00 – 12:00
Co-Chair: Roseanne Warren

- 10:00 **2388** *(Invited)* Nanoporous Materials for Fast and Reversible Electrochemical Energy Storage – S. H. Tolbert (University of California - Los Angeles)
- 10:40 **2389** Nanoporous Carbon As a Three-Dimensional Graphene Anode and Si Scaffold for Li-Ion Batteries – K. L. Harrison, M. A. Wolak, M. P. Siegal, and D. F. Sava Gallis (Sandia National Laboratories)
- 11:00 **2390** Biomass Activated Carbon for Solid Supercapacitors – K. Lian, M. Genovese, H. Wu, A. Virya, and J. Li (University of Toronto)
- 11:20 **2391** Effect of Pretreatment on Carbon Materials – A. K. Singh, N. Yasri, K. Karan, and E. P. L. Roberts (University of Calgary)
- 11:40 **2392** Nanoporous Electrodes By Laser-Induced Carbonization and Patterning of Polymer Resins for Flexible Energy Storage – D. Yilman, I. Lau, G. F. Hawes, and M. A. Pope (University of Waterloo)

Semiconductor Nanoporous Structures 1 – 13:00 – 14:40
Co-Chair: Joshua W. Galloway

- 13:00 **2393** *(Invited)* Nanoscale Chemistry and Electrochemistry with Porous Silicon Nanoparticles – M. J. Sailor (University of California, San Diego)
- 13:40 **2394** Optical Properties of Nanoporous Silicon in the Presence of Magnetic Nanostructures – P. Granitzer, K. Rumpf (Karl Franzens University Graz), P. Poelt (University of Technology Graz), and M. Reissner (Vienna University of Technology)
- 14:00 **2395** Simulation of Formation, Propagation and Interaction with Light of Nanoporous Structures in Indium Phosphide during Anodisation in Aqueous KOH – M. G. M. Keyes (Department of Physics, University of Limerick), R. P. Lynch, D. N. Buckley (Department of Physics, University of Limerick, Dept. of Chem. Eng., Case Western Reserve University), N. Quill (Department of Physics, University of Limerick), C. J. Nolan (Department of Mathematics and Statistics), and I. Clancy (Department of Physics, University of Limerick)

- 14:20 **2396** Bi-Metal Deposits within Nanostructured Silicon with Respect to Permanent Nanomagnets – K. Rumpf, P. Granitzer (Karl Franzens University Graz), R. Gonzalez-Rodriguez (Texas Christian University), J. Coffer (Texas Christian University Fort Worth), P. Poelt (University of Technology Graz), and H. Michor (Vienna University of Technology)

Semiconductor Nanoporous Structures 2 – 14:40 – 16:20
Co-Chair: John A. Staser

- 14:40 **2397** Engineered Nanoporous Anodic Alumina Structures for the Development of Advanced Sensing and Drug Delivery Systems – E. Xifré-Pérez, J. Ferré-Borrull, L. K. Acosta, L. Pol, J. Pallares, and L. F. Marsal (Universitat Rovira i Virgili)
- 15:00 **2398** Formation and Functional Features of Self-Ordered TiO₂ Nanotube Arrays – P. Schmuki (University of Erlangen-Nuremberg), X. Zhou, N. Liu (University of Erlangen-Nuremberg (FAU)), and M. Altomare (University of Erlangen-Nuremberg)
- 15:20 **2399** Holistic Study of Doped Layered Titanate Nanofibers – C. Heath, P. Cole, T. Kaloni, S. Barraza-Lopez, and R. Tian (University of Arkansas)
- 15:40 **2400** Morphological Control Effect of Hierarchical Heterostructure α -Fe₂O₃/TiO₂ Nanotube for Photoelectrochemical Water Splitting – H. Han (Los Alamos National Laboratory)
- 16:00 **2401** Anodic TiO₂ Nanotube Layers: Excellent Platform for Secondary Materials – R. Zazpe, H. Sopha, M. Krbal, J. Prikryl, and J. M. Macak (University of Pardubice)

MO1 Sensors, Actuators, and Microsystems
General Session
 Sensor
 Room 303, Washington State Convention Center

Microsystems – 09:00 – 12:00
Co-Chairs: Ajit Khosla and Larry A. Nagahara

- 09:00 **2403** A New Low Temperature Electrochemical Hydrocarbon and NO_x Sensor – P. K. Sekhar (Washington State University, Vancouver), S. Aravamudhan (North Carolina A&T State University), and A. Khosla (Yamagata University)
- 09:20 **2404** All-Solid-State Potentiometric Sensors for Potassium Ion Detection with Enhanced Stability By Interlayer Incorporation – W. Tran, S. Qiu, and H. J. Chung (University of Alberta)
- 09:40 **2405** Equilibrium Swollen EPDM Studied Using Photon Correlation Spectroscopy – M. H. Kabir (University of Rajshahi), A. Khosla, and H. Furukawa (Yamagata University)
- 10:00 **2406** A Portable System for Plant Volatile Detection – Y. Fang (College of Engineering, University of Georgia) and R. P. Ramasamy (University of Georgia, 30602)
- 10:20 **2407** Monitoring Steel Bar Corrosion in 3.5 Wt.% NaCl Solution Using a Fiber Optic Corrosion Sensor – F. Tang (Dalian University of Technology) and Y. Chen (Clemson University)

- 10:40 **2408** Engineering Plasmonic Lattice Structures for Lab-on-Chip Sensing Platforms – K. Smith, C. Norville, and J. Dawson (West Virginia University)
- 11:00 **2409** 3D Printing of Electrically Conductive Hybrid Organic-Inorganic Materials – S. Shah, M. N. I. Shiblee, S. Basher, J. M. H. Rahman (Yamagata University), L. A. Nagahara (NIH NCI), T. Thundat (University of Alberta), P. K. Sekhar (Washington State University, Vancouver), M. Kawakami, H. Furukawa, and A. Khosla (Yamagata University)
- 11:20 **2410** Sensitivity Control of Dye-Doped Polymeric Fiber-Optic Strain Sensor Using Radiative Emission-Absorption Mechanism – R. Furukawa and S. Kamimura (The University of Electro-Communications)
- 11:40 **2411** Pulsed Potential Amperometric Electrochemical Gas Sensors – T. Scheffler Sr. (Mine Safety Appliances Co.)
- Environmental Monitoring – 14:00 – 18:00**
Co-Chairs: Bryan A. Chin and Alex L. Simonian
- 14:00 **2412** Acoustic Sensors Coated with a Metal-Organic Framework for Room Temperature Monitoring of Carbon Dioxide and Methane – J. Devkota, K. J. Kim, J. Culp (National Energy Technology Laboratory, AECOM Pittsburgh), P. R. Ohodnicki Jr. (National Energy Technology Laboratory, Carnegie Mellon University), and D. W. Greve (Carnegie Mellon University, DWGreve Consulting)
- 14:20 **2413** Development and Evaluation of in-Situ Instrumentation for Li-Ion Cells – J. Fleming, T. Amietszajew, E. McTurk, D. Greenwood, and R. Bhagat (University of Warwick)
- 14:40 **2414** Reliability of Acceleration Sensor Data Under Environmental Stresses for Remote Machine Monitoring – R. Matsui, T. Kawamura, and N. Sugii (Hitachi, Ltd. Research & Development Group)
- 15:00 **2415** Persistent Drought Monitoring Using a Microfluidic-Printed Electro-Mechanical Sensor of Stomata in Planta – V. Koman, T. Lew, M. H. Wong, S. Y. Kwak (MIT), J. P. Giraldo (University of California, Riverside), and M. S. Strano (Massachusetts Institute of Technology)
- 15:20 **2416** A High Sensitivity and Compact Real Time Gas Concentration Sensor for Semiconductor and Electronic Device Manufacturing Process – H. Ishii (Hidekazu Ishii, Tohoku University), M. Nagase, N. Ikeda (Fujikin Incorporated), Y. Shiba, Y. Shirai, R. Kuroda, and S. Sugawa (Tohoku University)
- 15:40 **2417** MEMS Micro-Sensor for Sensitive Low Power Methane Detection – M. W. Findlay, J. R. Stetter (KWJ Engineering, Inc.), M. T. Carter (KWJ Engineering, Inc), and L. Ploense (KWJ Engineering, Inc.)
- 16:00 **2418** Wireless Zero-Power Air Quality Electrochemical Sensor Card for Iot Applications – J. R. Stetter, D. Peaslee (SPEC Sensors, LLC), V. Patel, and B. J. Meulendyk (KWJ Engineering, Inc.)
- 16:20 **2419** Metal Silicide-Refractory Oxide Ceramic Composites for High-Temperature and Harsh-Environment Sensing: Processing, Stability and Thermoelectric Properties – G. A. Yakaboylu, R. Chockalingam Pillai, K. Sabolsky (West Virginia University), D. J. Haynes (US DOE - National Energy Technology Laboratory), and E. M. Sabolsky (West Virginia University)
- 16:40 **2420** Electrochemical Detection of Tricresyl Phosphates in Gas – L. Zhou, P. J. Dean, B. A. Chin, and A. L. Simonian (Material Research & Education Center, Auburn University)
- 17:00 **2421** Thin and Thick Film Ceramic-Based Passive Wireless Temperature Sensors for Harsh Environments – K. Sivaneri Varadharajan Idhaim, K. Jones, G. Naidu, K. Sabolsky, E. M. Sabolsky (West Virginia University), M. Comparetto, and D. S. Reynolds (WVU - Computer Science and Electrical Engineering)
- 17:20 **2422** Optical Fiber-Based Corrosion Sensor for Health Monitoring of Oil and Gas Infrastructure – R. F. Wright, P. Lu (National Energy Technology Laboratory, AECOM), M. Ziomek-Moroz (National Energy Technology Laboratory), and P. R. Ohodnicki Jr. (National Energy Technology Laboratory, Carnegie Mellon University)
- 17:40 **2423** Non-Destructive Testing: Insuring Safety, Reliability, and Reducing Cost of Li Batteries – V. I. Redko (Enerize Corporation, FL USA), E. M. Shembel (Enerize Corporation), and T. V. Pastushkin (Enerize Corporation, FL USA)



Microfluidics, Sensors, and Devices 2

Sensor / Nanocarbons

Room 310, Washington State Convention Center

Microfluidics, Sensors and Devices 3 – 08:10 – 12:00

Co-Chairs: Jessica E. Koehne and Ajit Khosla

- 08:10 Welcoming Remarks
- 08:15 **2488** (Keynote) Integrated Microfluidic Bioanalytical Systems: Growing and Monitoring Microbial Cultures in Outer Space – A. Ricco (NASA Ames Research Center)
- 08:55 **2489** Downstream Impedance in Microfluidic Channels – T. Holm (Norwegian University of Science and Technology, University of Victoria), M. Ingdal (Norwegian University of Science and Technology), J. R. Strobl (University of Victoria), E. V. Fanavoll, S. Sunde, F. Seland (Norwegian University of Science and Technology), and D. A. Harrington (University of Victoria)
- 09:15 **2490** Single-Step 3D Printing Monolithic Electrochemical Microfluidic Devices – G. D. O'Neil, A. Dolisca, K. Halloran, and Q. Von Lengerke (Montclair State University)
- 09:35 **2491** Magnetically Driven Pump for Solid-State Microfluidic Flow Control – A. R. Smith (Shaw Mountain Technology LLC), D. Fologea, and P. Mullner (Boise State University)
- 09:55 Break
- 10:10 **2492** (Invited) Nanoparticles Based Electrochemical Biosensors for the Detection of Tumor Cells and Associated Biomarkers – J. J. Zhu (Nanjing University)

- 10:40 **2493** Immobilization of the Alcohol Dehydrogenase Enzyme on TiO₂ Nanotubes for Application in Microfluidic Fuel Cell – L. G. Arriaga (CIDETEQ), J. D. Real (University of British Columbia), J. Ledesma-García, J. D. D. Galindo de la Rosa, A. Alvarez, and G. Gonzalez Solano (Universidad Autónoma de Querétaro)
- 11:00 **2494** Ionic Transport in Aptamer Functionalized Nanochannel Array – S. Devarakonda, P. Du, B. Ganapathysubramaniam, and P. Shrotriya (Iowa State University)
- 11:20 **2495** Viscoelastic Properties of Nanoconfined Water Film and the Role of Alkali Salts – S. H. Khan (University of Peshawar, Peshawar, Pakistan) and P. M. Hoffmann (Wayne State University, Detroit, USA.)
- 11:40 **2496** A Microfluidic Platform for Electrochemical Detection and Mechanism Studies – D. E. Molina, A. Medina, H. Beyenal, and C. F. Ivory (Washington State University)

Microfluidics, Sensors and Devices 4 – 14:00 – 16:30

Co-Chairs: Praveen K. Sekhar, Chris Salthouse, and Jessica E. Koehne

- 14:00 **2497** (Invited) Fluorescence-Based Chemical Sensing and Imaging of Oxygen Concentrations for Microbial Processes in Microfluidic to Macroscale Habitats – J. W. Grate (Pacific Northwest National Laboratory)
- 14:30 **2498** Detection of Traumatic Brain Injury Biomarker with a Paper-Based Optofluidic Strip – X. Gao and N. Wu (West Virginia University)
- 14:50 **2499** Fluid-Imbibition Coupled Interferometry Study of Surface Modifications in Nanoporous Anodic Alumina for Biosensing – J. Ferré-Borrull, C. Eckstein, E. Xifré-Pérez, J. Pallares, and L. F. Marsal (Universitat Rovira i Virgili)
- 15:10 Break
- 15:25 **2500** Closed Bipolar Electrodes for Coupling Electroanalytical Events to Optical Readouts – K. Fu, J. Hu, A. Lopez, and P. W. Bohn (University of Notre Dame)
- 15:45 **2501** Smartphone Based Microanalytical Device for Immunoassay of 2,4-D Determination – Y. Wang (Washington state University), D. Du, and Y. Lin (Washington State University)
- 16:05 **2502** Multiplexed Electrochemical Immunosensor for Label-Free Detection of Cardiac Markers Using Carbon Nanofiber Array Device – R. Kumar (University of Manchester), M. Meyyappan, and J. E. Koehne (NASA Ames Research Center)
- 16:25 Concluding Remarks

Ballroom 6ABC, Washington State Convention Center

MO2 Poster Session – 18:00 – 20:00

Co-Chairs: Jessica E. Koehne and Ajit Khosla

- **2503** Development of Portable Electrochemical Enzyme Immunoassay for Hormone-Level Determination Utilizing Pencil-Lead Electrodes – H. Y. Tseng, Z. Cao (School of Engineering Science, Simon Fraser University), K. Salvante, P. Nepomnaschy (Faculty of Health Science, Simon Fraser University), and A. M. Parameswaran (School of Engineering Science, Simon Fraser University)

- **2504** Voltammetry of Valrubicin Quanticles – S. T. Miller (LipoMedics, Inc) and V. N. Trieu (LipoMedics, Inc.)
- **2505** Printed Carbon Nanotube Biosensor for Cardiac Health Monitoring – M. S. Cordeiro (NASA - Ames Research Center) and J. E. Koehne (NASA Ames Research Center)
- **2506** Electrochemical Detection of the Molecules of Life – S. D. Thomson (NASA Ames Research Center, University of Sydney) and J. E. Koehne (NASA Ames Research Center)
- **2507** Sub-Nanomolar Detection of Limonin Using Cnps Integrated Silk Fibroin As Transducer on Organic Electrochemical Transistor – N. Saraf, S. Barkam, M. Pepler (University of Central Florida), S. Seal (NanoScience Technology Center), and A. Metke (University of Central Florida)
- **2508** TbY_xO_y Electrolyte-Insulator-Semiconductor Glucose Biosensor – C. L. Chan, Y. H. Huang (Chang Gung University), B. S. Lou (Chang Gung University and Chang Gung Memorial Hospital, Chang Gung University), and T. M. Pan (Chang Gung University, Chang Gung Memorial Hospital)
- **2509** Fabrication of MEMS Electronics Devices Based on Fire-like ZnO Nanosheets By Low-Temperature Hydrothermal Synthesis Technology – Y. T. Tsai, S. J. Chang (National Cheng Kung University, Taiwan(R.O.C.)), Y. J. Hsiao (National Nano Device Laboratories), Y. L. Chu (National Formosa University, Yunlin 632, Taiwan), I. T. Tang (National University of Tainan), and L. W. Ji (National Formosa University)
- **2510** Fabrication of 3D Nanocarbon Structure for Potential Sensor Applications – R. Senegor, Z. Baron, D. Luo, J. Shaffer, A. Michelmore (Center for Nanostructures, Santa Clara University), and C. Y. Yang (Center For Nanostructures, Santa Clara University)

201

General Student Poster Session

All Divisions

Ballroom 6ABC, Washington State Convention Center

201 General Student Poster Session – 18:00 – 20:00

Co-Chairs: Venkat R. Subramanian, Kalpathy B. Sundaram, V. Chaitanya, P. Pharkya, and Alice H. Suroviev

- **2511** Limitations in Estimation of E_{1/2} from Cyclic Voltammetric Data – D. Parr IV and J. Leddy (University of Iowa)
- **2512** Relationship between the Degree of Dealloying of Ptpb Ordered Intermetallic Nanoparticle Deposited on TiO₂/ Cup-Stacked Carbon Nanotube and ORR Activity in Acidic Aqueous Media for Polymer Electrolyte Fuel Cells – F. Ando, T. Tanabe, T. Ohsaka, and F. Matsumoto (Kanagawa University)
- **2513** Optimization of Calcination Temperature in Preparation of a High Capacity Li-Rich Solid-Solution Li[Li_{0.2}Ni_{0.18}Co_{0.03}Mn_{0.58}]O₂ Material and Its Cathode Performance in Lithium Ion Battery – F. Nomura, T. Tanabe, T. Tsuda, T. Ohsaka, and F. Matsumoto (Kanagawa University)

- **2514** Relationship between Hole Design on Anode Electrode, the Reaction Temperature and the Rate of Li⁺ Ion Pre-Doping Reaction to Porous Laminated Graphite Anodes – T. Tsuda, N. Ando, T. Tanabe (Kanagawa University), K. Itagaki, N. Soma (Wired Co., Ltd), S. Nakamura (National Institute of Technology Nagaoka College), N. Hayashi (Industrial Research Institute of Niigata Prefecture), and F. Matsumoto (Kanagawa University)
- **2515** Characterization of N, F Co-Doped Mixed-Anion TiO₂ Thin Films Prepared By Reactive Pulsed Laser Deposition for Visible-Light Responsive Photocatalyst – N. Kawakami (Kyoto University), T. Uchiyama (Kyoto University), K. Yamamoto (Kyoto University), K. Maeda (Tokyo Institute of Technology), and Y. Uchimoto (Kyoto University)
- **2516** High-Voltage Aqueous Supercapacitors Based on Natfsi – D. Reber (Empa - Swiss Federal Laboratories for Materials Science, EPFL - École Polytechnique Fédérale de Lausanne), R. S. Kühnel, and C. Battaglia (Empa - Swiss Federal Laboratories for Materials Science)
- **2517** Oxidation-Reduction Potential Control for One Step Synthesis of Cu-Pt Core-Shell Nanoparticles – T. Nakamoto (Tohoku University), S. Tsuchida, R. Seki, Y. Ueyama (Panasonic Corporation), S. Yokoyama, H. Takahashi, and K. Tohji (Tohoku University)
- **2518** Optimization of Ratio and Amount of Ta Substitution in Li₇La₃Zr₂O₁₂ with Incorporation of Ca for Lithium Sulfur Battery – X. Chen, M. Xue, H. Lv (School of Automotive Studies, Clean Energy Automotive Engineering Center), B. Li (Clean Energy Automotive Engineering Center, School of Automotive Studies), and C. Zhang (School of Automotive Studies, Clean Energy Automotive Engineering Center)
- **2519** An Intermediate Temperature Molten Li-Air Battery with Improved Performance – G. K and A. S. Prakash (Central Electrochemical Research Institute, Madras unit)
- **2520** 3D Printed Electrodes for Membraneless Electrolyzers – J. C. Bui, J. T. Davis, E. S. Cousens, and D. V. Esposito (Columbia University)
- **2521** Advanced Nuclear Magnetic Resonance Techniques for Characterizing Ionic Liquids for Lithium Ion Battery Applications; High Pressure NMR and Fast Field Cycling Relaxometry – C. Mallia (Hunter College), K. Pilar (CUNY Graduate School), A. Rua (University of Puerto Rico Mayaguez), S. Suarez (Department of Physics, Brooklyn College, CUNY), S. Lai (Hunter College), J. Jayakody (University of Kelaniya), J. Hatcher (CUNY Graduate School), J. F. Wishart (Brookhaven National Laboratory), and S. Greenbaum (Department of Physics and Astronomy, Hunter College, CUNY)
- **2522** Using SEAL and Harpoon to Search for Suitable Water-Splitting Electrodes – T. J. Wilkinson, E. C. Priewe, K. L. Menningen, and S. C. Riha (University of Wisconsin - Stevens Point)
- **2523** Cobalt-Based Oxygen Evolution Electrocatalysts Biotemplated on DOPA-Displaying Viruses – J. Rho (Department of Chemistry, Seoul National University) and T. D. Chung (Advanced Institutes of Convergence Technology, Department of Chemistry, Seoul National University)
- **2524** Electrical and Structural Properties of ZrO₂/Y₂O₃/ZrO₂ Dielectric Film for DRAM Capacitor – S. T. Cho, C. H. An, S. H. Kim, D. G. Kim, D. S. Kwon, S. H. Cha, and C. S. Hwang (Seoul National University)
- **2525** Electrochemical Immunosensors Based on 2-Electrode System of 3D Interdigitated Electrodes Array – D. Lee (Department of Chemistry, Seoul National University) and T. D. Chung (Department of Chemistry, Seoul National University, Advanced Institutes of Convergence Technology)
- **2526** Unraveling the “Switching” Mechanism of Liquid Crystals for Laser Mitigation to Advance Aviation Safety – D. Santefort (Lewis University, Department of Physics), S. A. Smyth (Lewis University), J. Hofmann (Lewis University, Department of Physics), C. D. Crowder (Lewis University, Department of Physics), and J. J. Keleher (Lewis University, Department of Chemistry)
- **2527** Using Optical Trapping and Surface Energy to Investigate the Interactions between *E. coli* and Functionalized Substrates – T. J. Beckmann, D. M. Danhausen (Lewis University, Department of Chemistry), C. D. Crowder (Lewis University, Department of Physics), and J. J. Keleher (Lewis University, Department of Chemistry)
- **2528** Design of a Biomimetic Hydrogel Nanocomposite Material for Responsive Wound Management – H. R. Lange, L. K. Werth (Lewis University, Department of Chemistry), W. E. Chura (Lewis University, Department of Biology), and J. J. Keleher (Lewis University, Department of Chemistry)
- **2529** Biomimetic Nanocomposite Electrodes for Enhanced Electron Transfer in Microbial Fuel Cells – N. E. Yuede, H. J. Khan, F. N. Vukaj, and J. J. Keleher (Lewis University, Department of Chemistry)
- **2530** Enhancement of Conductive Coated Polymer Networks Utilizing Guest-Host Inclusion Complexes for the Electrotreatment of Heavy Metal Ion Effluent – K. P. Lanasky, J. E. Lambert III, and J. J. Keleher (Lewis University, Department of Chemistry)
- **2531** Selection of Electrolytes for Optimal Reverse Electroactuation Energy Harvesting – P. R. Adhikari and R. C. Reid (University of North Texas)
- **2532** Metal-Organic Framework Supported on Food Waste-Derived Carbon As an Efficient Bifunctional Catalyst for Oxygen Electrocatalysis – H. Wang (Beijing University of Chemical Technology)
- **2533** Lanthanum Nickelate Cathode Materials for Intermediate Temperature-Solid Oxide Fuel Cells – J. I. Lee, K. Y. Park, and J. Y. Park (Sejong University)

- **2534** Nitrogen Doped Short-Length Carbon Nanofiber Supported Cobalt Oxides for Oxygen Reduction Reaction and Evolution Reaction Catalysts – S. Lee, N. I. Kim, and J. Y. Park (Sejong University)
- **2535** Bifunctional Non-Noble Transition Metal Oxide-Based Materials for Unitized Reversible Fuel Cells – S. R. Choi, R. A. Afzal, and J. Y. Park (Sejong University)
- **2536** MXene-Based Flexible Supercapacitors for AC Line-Filtering with Ultrafast Frequency Response – M. Jung, G. S. Gund, H. H. Rana, M. Kota, J. Park (Sungkyunkwan University), Y. Gogotsi (Drexel University), and H. S. Park (SungKyunKwan University)
- **2537** Synthesis and Characterization of Carbon Quantum Dots for Use in FRET Sensors – A. N. Linhart and J. J. Keleher (Lewis University, Department of Chemistry)
- **2538** Optical Studies of Reactively Sputtered CuGaO₂ Thin Films – A. K. Saikumar (University Of Central Florida) and K. B. Sundaram (Univ. of Central Florida)
- **2539** Instability and Degradation Mechanism of Platinum-Group Metal (PGM)-Based Carbon Supported Electrocatalysts in Alkaline Medium – C. Lafforgue (Grenoble Alpes - CNRS, LEPMI), L. Dubau, F. Maillard (CNRS, LEPMI, F-38000 Grenoble, France), and M. Chatenet (LEPMI, CNRS-Univ. Grenoble Alpes)
- **2540** A Paper-Based Spectroelectrochemical Platform Integrated with Electrodes and Surface Enhanced Raman Scattering Zones – N. I. Andersen, K. Artyushkova, I. Gonzales, and P. Atanassov (University of New Mexico)
- **2541** Electrolyte Effects on *Shewanella Oneidensis* MR-1 Loading and Cyclic Voltammetric Behavior at an ITO Electrode – A. A. Alshahrani (Loyola University Chicago)
- **2542** Simulation of Correlated Motion of Li⁺ Vacancies in Lithium-Oxyhalide Anti-Perovskites – Z. Mehmedović, V. Y. Z. Wei, and N. Adelstein (San Francisco State University)
- **2543** High Temperature Electrooxidation of Glycerol on Nickel – T. Borsboom, T. Holm, H. Bao, A. Escobar, and D. A. Harrington (University of Victoria)
- **2544** Conductivity of Garnet-Type Lithium Lanthanum Zirconate Based Composite Electrolytes – X. Zhang and J. Fergus (Auburn University)
- **2545** Synthetic Design of a Supramolecular Complexing Agent for Advanced Cu Chemical Mechanical Planarization Applications – N. Mistry, M. Hill, L. Kilmer, H. Shuchi, D. S. Kissel, and J. J. Keleher (Lewis University, Department of Chemistry)
- **2546** Effect of Fillers on Viscosity and Electrical Conductivity of Glass Composite Sealants – S. H. Baek, S. Park, and J. C. Lee (Myongji University)
- **2547** Integration of Porous Piezoelectric Separator for a Self-Charging Supercapacitor – M. Li, J. Y. Hwang (UCLA), M. El-kady (UCLA, University of Cairo), B. McVerry (UCLA), and R. B. Kaner (University of California, Los Angeles (UCLA))
- **2548** All-Solid-State Lithium Cells Assembled with Solid Polymer Electrolytes Based on Poly(ϵ -caprolactone) – Y. Seo, Y. C. Jung (Department of Chemical Engineering, Hanyang University), M. Park, and D. W. Kim (Hanyang University)
- **2549** Efficient Synthesis of Noble-Metal-Based Metallic Hydrogels/Aerogels and Their Electrochemical Applications – Q. Shi (Washington State University), C. Zhu (The School of Mechanical and Materials Engineering, WSU), D. Du, and Y. Lin (Washington State University)
- **2550** Control of Pore Depth in GaN Porous Structures Utilizing a Photoabsorption Process Under below-Bandgap Illumination – M. Toguchi, S. Matsumoto, and T. Sato (Hokkaido University)
- **2551** Electrochemical Characteristics of the Na-Ion Hybrid Capacitors Assembled with Fibrous Composite Separator Containing Core-Shell Structured SiO₂ Nanoparticles – H. Ko, M. Park, and D. W. Kim (Hanyang University)
- **2552** Zwitterionic Based Single-Ion Conducting Hydrogel Electrolyte for Flexible Supercapacitor – J. H. Park, H. H. Rana (Sungkyunkwan University), and H. S. Park (SungKyunKwan University)
- **2553** Electrochemical Characterization of the Lithium-Ion Cells Assembled with Ester-Based Electrolyte at Low Temperature – S. H. Park, S. H. Kim (Hanyang University), S. Kim (Samsung SDI Co., Ltd.), and D. W. Kim (Hanyang University)
- **2554** Bayesian Statistical Framework for Deconvolving the Distribution of Relaxation Times from Electrochemical Impedance Spectroscopy Data – M. B. Effat and F. Ciucci (The Hong Kong University of Science and Technology)
- **2555** Effect of Lattice Structure of Bismuth Sesquioxide on the Electrochemical Energy Storage Characteristics – B. R. Kersten, J. Zillinger, V. Utgikar, B. Day, and K. S. Raja (University of Idaho)
- **2556** Development of Functionalized “UiO-66 MOF” Embedded Cellulose Nanocomposites for Photoelectrochemical Water Splitting – J. J. Shanahan, L. Bueno, D. S. Kissel, and J. J. Keleher (Lewis University, Department of Chemistry)
- **2557** A Dynamic Impedance Study of the Initial Stages of Nickel Oxidation – M. Alikarami, T. Holm, and D. A. Harrington (University of Victoria)
- **2558** Investigation of Manufacturing Defects (Catalyst layers & pinholes) in PEMFC Electrode – A. M. Prasad, M. Fowler, and M. Pritzker (University of Waterloo)
- **2559** Molecular Dynamics Simulation of Modified Nafion 117 Based Anion Exchange Membrane Fuel Cell: Transport and Nanophase-Segregated Structure Properties – C. Caliendo Jr., S. S. Jang, and J. Lee (Georgia Institute of Technology)
- **2560** Structure and Electrical Properties of ZrO₂/Al₂O₃/TiO₂ Films Grown Via Atomic Layer Deposition on TiN Electrodes – S. H. Cha, C. H. An, S. H. Kim, D. G. Kim, D. S. Kwon, S. T. Cho, and C. S. Hwang (Seoul National University)

- **2561** Electrical Properties of Al-Doped SrTiO₃ Films Grown Via Atomic Layer Deposition on Ru Electrodes – S. H. Kim, C. H. An, D. S. Kwon, S. Cha, S. T. Cho (Seoul National University), and C. S. Hwang (Inter-University Semiconductor Research Center, Seoul National University)
- **2562** Micropatterned Pyramidal Ionic Gels Capacitance Change Pressure Sensors – I. Hwang, K. L. Kim, and C. Park (Dept of Materials Science Engineering, Yonsei University)
- **2563** Physical and Electrochemical Characterizations of Li₂MnSiO₄ Synthesized By Electrospinning with Heat Treatment – A. Belgibayeva and I. Taniguchi (Tokyo Institute of Technology)
- **2564** Iridium Core/Shell Catalysts for PEM Water Electrolyzer Anodes Synthesized Via Galvanic Exchange – K. F. K. Thorbjørnsen, G. Singh, M. Manikandan (Norwegian University of Science and Technology), J. R. Tolchard (SINTEF Materials and Chemistry), M. S. Thomassen (SINTEF), and S. Sunde (Norwegian University of Science and Technology)
- **2565** Evaluation of Barrier Properties of Organic Coatings By Electrochemical Permeation and Electrochemical Methods – J. V. Nardeli (São Paulo State University-UNESP, Chemistry Institute), C. S. Fugivara, and A. V. Benedetti (São Paulo State University, Institute of Chemistry)
- **2566** Probing the Interactions between CeO₂ Nanoparticles and Cleaning Chemistry Relevant to Post STI CMP Cleaning – T. B. Zubi, C. F. Graverson, B. M. Sherry, J. J. Keleher (Lewis University, Department of Chemistry), D. S. Dickmann, B. Her, and N. D. Urban (Ferro Corporation)
- **2567** Evaluating the Electrolyte Consumption and Cycling Performance of Practical Silicon-Graphite Electrodes – S. Oswald, M. Wetjen, D. Pritzl, and H. A. Gasteiger (Technical University of Munich)
- **2568** Comprehensive Analysis of a Tubular, Reversible Solid Oxide Fuel Cell By Using a 3-D Computational Fluid Dynamics Model – J. Y. Yoo, J. Kang, and J. Bae (Korea Advanced Institute of Science and Technology)
- **2569** Probing Oxide-Nitride Selectivity As a Function of CeO₂ Valence State Relevant to STI CMP – B. M. Sherry, K. M. Wortman-Otto, A. M. Mikos, J. J. Keleher (Lewis University, Department of Chemistry), D. S. Dickmann, B. Her, and N. D. Urban (Ferro Corporation)
- **2570** Probing Interactions at the Polymeric Filtration Media/ CMP Slurry Interface Using Dynamic Electrochemical Quartz Crystal Nanobalance (EQCN) and Atomic Force Microscopy (AFM) – M. Salinas, C. Saucedo, J. J. Keleher (Lewis University, Department of Chemistry), Y. Hudiono, S. Harton, and P. Connor (Pall Corporation)
- **2571** Spontaneous Formation of Pb/Ag Super Lattices – F. V. Owhoso (University of Florida), D. Wu, and S. Brankovic (University of Houston)
- **2572** Immobilizing Zincate Ions for Long-Cycle High-Energy-Density Aqueous Batteries – J. Huang, G. G. Yadav, D. Turney, J. W. Gallaway, M. Nyce, S. Kolhekar, and S. Banerjee (CUNY Energy Institute at the City College of New York)
- **2573** Cellulose-Based Nanoporous Materials That Incorporate the Antimicrobial Metal-Organic Framework HKUST-1 – T. A. Rickhoff, D. S. Kissel, and J. J. Keleher (Lewis University, Department of Chemistry)
- **2574** Understanding Amyloid-Beta Plaque Formation By Monitoring the Redox Activity of Copper at the Active Site – S. Qadir, A. L. Tabaka (Lewis University), D. S. Kissel, J. J. Keleher (Lewis University, Department of Chemistry), and M. A. Havens (Lewis University, Department of Biology)
- **2575** Proton Reduction Catalysis at a Modified Gallium Phosphide Photocathode Surface – M. MacInnes, S. Acharya, N. Lehnert, and S. Maldonado (University of Michigan)
- **2576** Preparation and Characterization of Cross-Linked Anion Exchange Composite Membrane for Alkaline Exchange Membrane Fuel Cell – T. Y. Son, S. I. Han (Gyeongsang National University in Korea), and S. Y. Nam (Gyeongsang National University)
- **2577** Preparation and Electrokinetic Characterization of Composite Membranes with Various Ion Exchange Moieties – K. S. Im, T. Y. Son, S. I. Han, J. S. Yun (Gyeongsang National University in Korea), and S. Y. Nam (Gyeongsang National University)
- **2578** Graphene-PEDOT-Platinum Tertiary Composite Material Based Catalyst for Hydrogen Evolution Reaction – H. Wang (UCLA), R. Hou (University of Alberta), M. Li (UCLA), M. El-kady (University of Cairo), and R. B. Kaner (University of California, Los Angeles (UCLA))
- **2579** Correlation of Surface Free Energy and Hydrophobicity of Aluminum Alloy with and without Corrosion Resistant Organic Coatings – J. V. Nardeli (São Paulo State University-UNESP, Chemistry Institute), A. V. Benedetti, and C. S. Fugivara (São Paulo State University, Institute of Chemistry)
- **2580** Inhibiting Dendritic Growth Using Additives: Efficacy of Deposit-Incorporating Additives vs. Additives Accumulating on the Electrode – K. Guzman and U. Landau (Case Western Reserve University)
- **2581** Stabilization of Tunnel Manganese Oxide Electrodes in Li-Ion and Na-Ion Batteries – B. Byles and E. Pomerantseva (Drexel University)
- **2582** Enhanced Infrared Sensing Properties of Vanadium Pentoxide Nanofibers for Bolometer Application – N. Paul (Indian Institute of Technology Hyderabad), S. Vadnala (Indian Institute of Technology Bombay), A. K. Panigrahi (Indian Institute of Technology Hyderabad, K L University Hyderabad), H. Kumar (Indian Institute of Technology Hyderabad), A. Agrawal (Indian Institute of Technology Bombay), and S. G. Singh (Indian Institute of Technology Hyderabad)

- **2583** Evaluating the Roles of Proton Transfer and H-Bonding in the Electron Transfer Reactions of Organic Redox Couples in Non-Aqueous Solvents: Oxidation of Phenylenediamines in the Presence of Pyridine Bases in Acetonitrile – T. D. Pham, L. A. Clare, L. Rafou, A. Buenaventura, C. Arthurs, and D. K. Smith (San Diego State University)
- **2584** Metal-Organic-Frameworks-Modified Separator for Lithium–Oxygen Batteries with Long Cycle Life – X. Zhang, Y. Cha, P. Dong, J. I. Lee, and M. K. Song (Washington State University)
- **2585** Preparation of $\text{Li}_{1-x}\text{Ni}_{1+x}\text{O}_2$ Thin Films By Pulsed Laser Deposition and the Electrochemical Performance for Oxygen Evolution Reaction in Alkaline Media – Y. Yuki (Kyoto University), T. Uchiyama (Kyoto University), K. Yamamoto (Kyoto University), and Y. Uchimoto (Human and Environmental Studies, Kyoto University)
- **2586** Synthesis of $\text{LiNi}_{1-x}\text{Co}_x\text{PO}_4/\text{C}$ Nanocomposites By Aerosol Process and Powder Technology and Their Cell Performance for Lithium Ion Battery – Y. Li and I. Taniguchi (Tokyo Institute of Technology)
- **2587** Effect of the Crystalline Structure and Size of Group 4 and 5 Oxides to Oxygen Reduction Reaction – S. Hirano, E. Niwa, T. Maruyama, and T. Saida (Meijo University)
- **2588** LiFSI as Electrolyte Salt for Li-Ion Batteries Based on Micron Sized Silicon as Anode Material – K. Asheim (Norwegian University of Science and Technology), N. P. Wagner (Norwegian University of Science and Technology, Sintef Materials and Chemistry), H. F. Andersen, J. P. Mæhlen (Institute for Energy Technology), and A. M. Svensson (Norwegian University of Science and Technology)
- **2589** Effect of Anode Channel Depth on Cell Performance in Polymer Electrolyte Membrane Water Electrolyser – J. O. Majasan, J. I. S. Cho, I. Dedigama, P. R. Shearing, and D. J. L. Brett (University College London)
- **2590** An All-Transparent Thin Film Flexible Supercapacitor Based on Oblique Angle Deposited NiO Nanowires Arrays – J. Ma (Institute of Semiconductors, Chinese Academy of Science, University of Chinese Academy of Sciences), W. Liu (Institute of Semiconductors, Chinese Academy of Science), S. Zhang, F. Yang (Institute of Semiconductors, Chinese Academy of Science, University of Chinese Academy of Sciences), and X. Wang (Institute of Semiconductors, Chinese Academy of Sciences, University of Chinese Academy of Sciences)
- **2591** Ionic and Electronic Transport in Nanocrystalline $\text{La}_{0.9}\text{Sr}_{0.1}\text{Ga}_{0.9}\text{Mg}_{0.1}\text{O}_{3-\delta}$ – T. Chen (Dept. of Hydrogen Energy Systems, Kyushu University), D. Pham (The University of Arizona), G. F. Harrington (Massachusetts Institute of Technology), K. Sasaki (wpi-I2CNER, Kyushu University), E. L. Corral (The University of Arizona), and N. H. Perry (Massachusetts Institute of Technology)
- **2592** The Oxygen Reduction Reaction Activity of Pt/Carbon-Sphere Formed By Silica Bead Core and Graphene Oxide Wall – K. Sakakibara, T. Maruyama, and T. Saida (Meijo University)
- **2593** Microstructured Polymer-Ionic Liquid Composite Film for Capacitive Pressure Sensors – K. L. Kim, I. Hwang, and C. Park (Dept of Materials Science Engineering, Yonsei University)
- **2594** In-Situ Synthesis of $\text{Sn}/\text{SnO}_2/\text{C}$ Composites for Lithium and Sodium-Ion Batteries – Y. Cha, P. Dong, X. Zhang, and M. K. Song (Washington State University)
- **2595** Liquid-Feed Flame Spray Pyrolysis Derived Nanopowders As a Route to Electrically Conducting Calcium Aluminate ($12\text{CaO}\cdot 7\text{Al}_2\text{O}_3$) Thin Films – E. Temeche, E. Yi, and R. Laine (University of Michigan)
- **2596** Design and Synthesis of Hierarchical SeS_2/C Nanocomposite Cathodes for High Performance Lithium Batteries with Ether-Based Electrolytes – P. Dong, J. I. Lee, Y. Cha, X. Zhang, and M. K. Song (Washington State University)
- **2597** Water Velocity Distribution and Its Impact on the Performance of an Electrocoagulation Reactor for Drinking Water Treatment – A. Nouri-Khorasani, S. T. Mcbeath, M. Mohseni, and D. P. Wilkinson (University of British Columbia)
- **2598** Microstructural Effects on Disorder and Transport in Irradiated Pyrochlore Thin Films – N. Parker, C. R. Kreller, J. A. Valdez, T. Holesinger, Y. Wang, M. Tang, and B. Uberuaga (Los Alamos National Laboratory)
- **2599** Synthesis and Characterizations of Modified Vanadium Glass Electrodes for Use in Lithium-Ion Batteries – M. Kindle, M. K. Song, and J. McCloy (Washington State University)
- **2600** Multiscale Modeling Approach to Identify Glassy Electrolytes for Sodium Ion Batteries – A. Dive, C. C. King, S. P. Beckman, and S. Banerjee (Washington State University)
- **2601** Annealing Effects on the Electrical and Optical Properties of $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$ Thin Films – G. Skaria (University of Central Florida) and K. B. Sundaram (Univ. of Central Florida)
- **2602** Field Induced Ordering of Nanoparticles – G. M. Wilkins, S. Das, and B. Das (University of Nevada, Las Vegas)
- **2603** Cubic Phase of $\alpha\text{-CsPbI}_3$ Perovskite Nanocrystals for Photodiode Application – K. M. Sim, J. Cho, S. Yoon, S. Yu, M. S. Jang, M. Kang, K. Kim, and D. S. Chung (Daegu Gyeongbuk Institute of Science & Technology (DGIST))
- **2604** Decorating Graphene Oxide with Ionic Liquid Nanodroplets: An Approach Leading to Energy Dense, High Voltage Supercapacitors – Z. She (University of Waterloo), D. Ghosh (Jain University), and M. A. Pope (University of Waterloo)
- **2605** Redox-Responsive Dimerization in a Ferrocene-Ureidopyrimidinone Supramolecular Assembly – M. Cedano and D. K. Smith (San Diego State University)

- **2606** Enhanced Electrochemical Activity of Polyaniline-Ferricyanide Films in Neutral Electrolyte – R. M. West and L. Marinelli (University of San Francisco)
- **2607** Conversion of a Weak Three H-Bond Dimer to a Strong Three H-Bond Dimer Using Electron Transfer Induced Proton Transfer – H. Choi and D. K. Smith (San Diego State University)
- **2608** Durability Test of Anode-Supported Solid Oxide Fuel Cell Under Diverse Load Conditions – Y. Kim, M. Saqib, and J. Y. Park (Sejong University)
- **2609** Detection of Electrooxidation Products in Microfluidic Devices Using Raman Spectroscopy – T. Li, T. Holm, and D. A. Harrington (University of Victoria)
- **2610** Design of a Solid-State Electrochemical Methane Sensor Based on Laser-Induced Graphene for Deployment in the Natural Gas Distribution Network – M. Dosi, M. A. Pope, and M. Fowler (University of Waterloo)
- **2611** Kinetics of Initial Stages of Pt Oxidation from Electrochemistry and Surface X-Ray Diffraction – N. Stubb (University of Victoria), T. Fuchs, M. Ruge, O. M. Magnussen (Kiel University), J. Drnec (European Synchrotron Radiation Facility), and D. A. Harrington (University of Victoria)
- **2612** Core-Shell V_2O_5 /Conductive Polymers Hybrid Aerogels for High-Performance Supercapacitors – W. Bi (University of Washington, Tongji University), G. Gao, G. Wu (Tongji University), and G. Cao (University of Washington)
- **2613** A General Room Temperature Synthesis of Self-Assembled Urchin-like Nanostructured Vanadates for Lithium-Ion Batteries – Y. Hu (University of Washington, Central South University), J. Chen, A. Pan, S. Liang (Central South University), and G. Cao (University of Washington)

WEDNESDAY, MAY 16

Highlights

- 0800h..... Industrial Electrochemistry and Electrochemical Engineering Division H. H. Dow Memorial Student Achievement Award – *Rm 608, WSCC*
- 0820h..... Energy Technology Division Graduate Student Award sponsored by Bio-Logic – *Rm 608, WSCC*
- 1400h..... Technical Exhibit opens, Career Expo and Resume Review – *Ballroom 6ABC, WSCC*
- 1400h..... Vittorio de Nora Award – *Rm 303, WSCC*
- 1530h..... Networking Break – *Ballroom 6ABC, WSCC*
- 1720h..... Energy Technology Division Supramaniam Srinivasan Young Investigator Award – *Rm 603, WSCC*
- 1800h..... Technical Exhibit, and General Poster Session – *Ballroom 6ABC, WSCC*

A01

Battery and Energy Technology Joint General Session

Battery / Energy Technology
Room 607, Washington State Convention Center

Supercapacitors 1 – 08:00 – 12:30

Co-Chairs: Prashant N. Kumta and Leela Arava

- 08:00 **141** *(Invited)* Heteroatom Enhanced Sodium Ion Capacity and Rate Capability in a Hydrogel Derived Carbon Give Record Performance in a Hybrid Ion Capacitor – D. Mitlin (Clarkson University) and J. Ding (Binghamton University)
- 08:30 **142** Studies on Electrochemical Properties of Ni-Mn-Oxides for Advance Energy Storage Application – A. Ray (Jadavpur University), A. Roy, S. Saha, and S. Das (Jadavpur University, Kolkata-700032, India.)
- 08:50 **143** Inner-Constructed Growth Approach to Fabricate Integrated Chemical Vapor Deposition-Grown Graphene/ $Ni(OH)_2$ /Ni Foam As an Advanced Electrode for Supercapacitors – S. Liu, S. C. Jun (School of Mechanical Engineering, Yonsei University), and K. N. Hui (Institute of Applied Physics and Materials Engineering)
- 09:10 **144** Advances in Reliability of Conducting Polymers and Conducting Polymer Based Capacitors in High Humidity Environment – A. P. Chacko (KEMET Electronics Corporation), Y. Jin (KEMET Electronics (Suzhou) Co., Ltd.), Y. Shi, A. Bunha (KEMET Electronics Corporation), Q. Chen (KEMET Electronics (Suzhou) Co., Ltd.), and P. Lessner (KEMET Electronics Corporation)

- 09:30 145 Increasing the Capacity of Nano-Structured LiMn₂O₄ Pseudocapacitors by Selective Crystallization of Dissolution Resistant Surface Facets – Y. Yan, B. Lesel, N. Szeto, J. Chen, S. Robbenolt, and S. H. Tolbert (University of California - Los Angeles)
- 09:50 Break
- 10:10 146 Designing a High-Performance Core-Shell Nanorod-Based WO₃// WO₃/MnO₂ Hybrid Ultracapacitor: A Structure and Property Correlation Study – D. Sarkar (Indian Institute of Science), S. Mukherjee, D. Das Sarma (Indian Institute of Science, Bangalore, INDIA), and A. K. Shukla (Indian Institute of Science)
- 10:30 147 Atomic Layer Deposition of Alumina on Silicon Nanotrees, Towards the Development of 3D Ultrastable Aqueous Si Microsupercapacitor – A. Valero, D. Gaboriau (Univ. Grenoble Alpes, CEA, CNRS, INAC, SyMMES, Grenoble, CEA Grenoble - INAC-PHELIQS (UGA, CEA)), A. Mery (Univ. Grenoble Alpes, CEA, CNRS, INAC, SyMMES, Grenoble), P. Gentile (CEA Grenoble - INAC-PHELIQS (UGA, CEA)), and S. Sadki (Univ. Grenoble Alpes, CEA, CNRS, INAC, SyMMES, Grenoble)
- 10:50 148 Water-in-Salt Electrolytes for High-Voltage Supercapacitors – N. K. Thangavel, K. Mahankali (Wayne State University), Y. Ding (U.S. Army, TARDEC), and L. Arava (Wayne State University)
- 11:10 149 Highly Scalable Fabrication of Planar-Type Thermally Chargeable Supercapacitor Based on Graphene Oxide – S. L. Kim, J. H. Hsu, and C. Yu (Texas A&M University)
- 11:30 150 Ultrahigh Volumetric Pseudocapacitance of Conducting Polymer Networks – H. S. Park (SungKyunKwan University)
- 11:50 151 Fabrication of Metal Organic Framework Flexible All Solid State Supercapacitors By Electrophoretic Deposition – F. Z. Amir, J. Peck, and J. M. Hanna Jr. (Winthrop University)
- 12:10 152 Mechanical and Electrochemical Properties of a Composite Structural Supercapacitor – Y. Wang, X. Qiao, C. Zhang, and X. Zhou (University of Miami)

Supercapacitors 2 – 13:30 – 17:50

Co-Chairs: Edward M. Sabolsky and Rahul Singhal

- 13:30 153 Hybrid Supercapacitor-Rechargeable Battery Based on RbAg₄I₅ Ceramic Electrolyte – Y. Wang, X. Qiao, C. Zhang, and X. Zhou (University of Miami)
- 13:50 154 Effect of Graphene Oxide on Electrochemical Behavior of MnO₂/GO Supercapacitor – R. Singhal and J. T. Fagnoni (Central Connecticut State University)
- 14:10 155 Hetero-Atom Doped Highly Conductive Porous Carbon for Exceptional Electrochemical Performance – S. R. Mangisetti, S. Ramaprabhu, and K. M. (Indian Institute of Technology Madras)
- 14:30 156 Carbide-Derived Carbon As Electrode Materials of Electrochemical Double Layer Supercapacitors in Ionic Liquid Electrolytes – M. Messner, C. M. Penney, K. Johnson, B. V. Caldwell, J. D. Hettinger, and L. Yu (Rowan University)

- 14:50 157 Assembling 2D Mxene into 3D Ordered Structures for High Power Li-Ion Capacitors – J. Orangi and M. Beidaghi (Auburn University)
- 15:10 158 Nano-Oxide Enhancement of Biomass-Derived Activated Carbons for Supercapacitor Applications – T. Yumak (West Virginia University, Sinop University), G. A. Yakoboylu, D. Bragg, O. Oginni, K. Singh, and E. M. Sabolsky (West Virginia University)
- 15:30 Break
- 15:50 159 Pseudocapacitor Based on Mediators Attached to CNTs – Z. Yan, C. Zhang, X. Qiao, and X. Zhou (University of Miami)
- 16:10 160 Nickel Vanadium Layered Double Hydroxides Nanostructures for High-Performance Flexible Supercapacitor Applications – A. Tyagi and R. K. Gupta (Indian Institute of Technology Kanpur)
- 16:30 161 An Investigation into Biomass-Derived Carbon Electrode Scalability and Large-Scale Monolith Electrode Capacitors – A. Ngan, D. W. Kirk, and C. Q. Jia (University of Toronto)
- 16:50 162 Electrostatically Sprayed Manganese Oxide Films – from Pseudocapacitive Charge Storage Materials to 3D Microelectrode Integrands – R. Agrawal, E. Adelowo, A. Rabiei Baboukani, M. F. Villegas, A. Henriques, and C. Wang (Florida International University)
- 17:10 163 Effect of Electrode Composition on Heat Generation Rate in Electrical Double Layer Capacitors – O. Munteshari and L. Pilon (UCLA)
- 17:30 164 Physical Interpretations of Impedance Spectra for Pseudocapacitive Electrodes – B. A. Mei and L. Pilon (UCLA)

A02

Large-Scale Energy Storage 9

Electronics and Photonics / Battery / Industrial Electrochemistry and Electrochemical Engineering
Room 604, Washington State Convention Center

Aqueous Systems 2 – 08:20 – 12:00

Co-Chairs: Trung Van Nguyen and Christopher Johnson

- 08:20 216 Redox Flow Battery Electrolyte Design Formulations: Molecular Screening and Engineering – V. Murugesan (Pacific Northwest National Laboratory), X. Wei (Joint Center for Energy Storage Research), A. Hollas, Z. Nie, B. Li, V. Sprenkle, D. Reed (Pacific Northwest National Laboratory), and W. Wang (Joint Center for Energy Storage Research (JCESR))
- 08:40 217 A Re-Examination of Acid-Base Flow Batteries – J. Pickering, N. S. Sinclair (Case Western Reserve University), and J. S. Wainright (Case Western Reserve University, Cleveland, Ohio, USA)
- 09:00 218 Highly Dispersed Rh_xS_y Catalyst on Carbon Support with High Nafion Affinity for HER/HOR in HBr Solution – Y. Li (University of Kansas) and T. V. Nguyen (The University of Kansas)
- 09:20 219 Optimization of the Hydrogen/Manganese Hybrid Redox Flow Battery – J. Rubio-Garcia, A. R. J. Kucernak, D. Li, D. Zhao, V. Yufit, M. A. Gomez Gonzalez, K. F. Fahy, and N. P. Brandon (Imperial College London)
- 09:40 Break

- 10:00 220 Developing New Chemistry for Redox Flow Batteries – C. DeBruler (Utah State University), B. Hu, J. Luo, J. Moss, A. Sam (Utah State University), and T. L. Liu (Utah State University)
- 10:20 221 On Extending Cycle-Life of the Soluble Lead Redox Flow Battery – R. Suman, M. K. Ravikumar, N. Jaiswal, S. Patil (Indian Institute of Science - Bangalore), and A. K. Shukla (Indian Institute of Science)
- 10:40 222 Asymmetric Polyoxometalate Electrolytes for Redox Flow Batteries – J. Friedl, M. V. Holland-Cunz, F. Cording, F. Pfanschilling, C. Wills, W. McFarlane (Newcastle University), B. Schrickler, R. Fleck, H. Wolfschmidt (Siemens AG), and U. Stimming (Newcastle University)
- 11:00 223 Zinc/Iron Hybrid Flow Batteries for Grid Scale Energy Storage and Regulation – B. Kienitz (ViZn Energy Systems)
- 11:20 224 Linked Anolyte-Catholyte Materials for Redox Flow Battery Applications – S. C. Mann, A. Dumitrascu, N. J. Mortimer, J. D. Scott, D. R. Henton, and T. F. Guarr (Michigan State University Bioeconomy Institute)
- 11:40 225 Electrochemical Stability and Reversibility upon Cycling of Aqueous Polysulfide Electrodes Beyond the Solubility Limit – M. S. Pan, L. Su, L. W. Jing, S. L. Eiler, and Y. M. Chiang (Massachusetts Institute of Technology)
- Non-Aqueous Systems – 13:40 – 17:40**
Co-Chairs: Christopher Johnson and Wei Wang
- 13:40 226 The Influence of Electrode Microstructure on the Performance of Non-Aqueous Redox Flow Batteries – A. Forner-Cuenca (Massachusetts Institute of Technology (MIT)) and F. R. Brushett (Joint Center for Energy Storage Research)
- 14:00 227 Redox Reaction of Tris(2,2'-bipyridine)Iron Complexes on Carbon Fiber Dispersed in a Solvate Ionic Liquid – Y. Katayama, M. Sugiyama, K. Yoshii, N. Tachikawa, and N. Serizawa (Keio University)
- 14:20 228 Tailoring Organic Redox Couples for Non-Aqueous Redox Flow Batteries – N. H. Attanayake (University of Kentucky), J. L. Barton (Joint Center for Energy Storage Research), M. Casselman (University of California, Riverside), C. F. Elliott, A. P. Kaur (University of Kentucky), J. A. Kowalski, J. D. Milshtein (Joint Center for Energy Storage Research), J. Anthony (University of Kentucky), F. R. Brushett (Joint Center for Energy Storage Research), J. Landon (University of Kentucky Center for Applied Energy Research), and S. A. Odom (University of Kentucky)
- 14:40 229 Progress Toward High Voltage, High Cycle Life Non-Aqueous Flow Cells for Grid Scale Energy Storage – B. L. Davis, T. Chu, S. Maurya, I. A. Popov, E. Batista, and P. Yang (Los Alamos National Laboratory)
- 15:00 230 2,1,3-Benzothiadiazole Derivatives As Anolyte Materials for Non-Aqueous Redox Flow Batteries – J. Zhang (Joint Center for Energy Storage Research (JCESR), Argonne National Laboratory), J. Huang (Argonne National Lab), W. Duan, J. A. Kowalski (Joint Center for Energy Storage Research), B. Hu (Argonne National Laboratory), I. A. Shkrob (Chemical Sciences and Engineering Division), R. Assary (Joint Center for Energy Storage Research (JCESR)), F. R. Brushett, X. Wei (Joint Center for Energy Storage Research (JCESR))
- 15:20 Break
- 15:40 231 Cycling Properties of Fe-Al Chloride Electrolytes for Non-Aqueous Potassium Redox Flow Batteries – A. D. Poletayev, A. Baclig, G. McConohy, and W. C. Chueh (Materials Science & Engineering, Stanford University)
- 16:00 232 Advanced Intermediate Temperature Sodium-Metal Halide (Na-MH) Batteries for Stationary Energy Storage Applications – H. J. Chang (Pacific Northwest National Laboratory), K. Jung (Research Institute of Industrial Science and Technology), J. F. Bonnett, N. L. Canfield, X. Lu, V. Sprenkle, and G. Li (Pacific Northwest National Laboratory)
- 16:20 233 Incremental Capacity Analysis to Recognize Ageing Variations for Liquid Metal Battery – C. Xu, K. Wang, and S. Cheng (Huazhong University of Science and Technology)
- 16:40 234 Intermediate Temperature Na-ZnCl₂ Battery – X. Lu, H. J. Chang, J. F. Bonnett, N. L. Canfield (Pacific Northwest National Laboratory), K. Jung (Research Institute of Industrial Science and Technology), V. Sprenkle, and G. Li (Pacific Northwest National Laboratory)
- 17:00 235 Intermediate Temperature Sodium Batteries Enabled By an Inorganic Molten Catholyte – L. J. Small, S. Percival, J. Lamb, E. Allcorn, and E. D. Spoeerke (Sandia National Laboratories)
- 17:20 236 A High Capacity, Room Temperature Hybrid Flow Battery Consisted of Liquid Na-Cs Anode and Aqueous NaI Catholyte – C. Liu and L. Shaw (Illinois Institute of Technology)

Room 608, Washington State Convention Center

Industrial Electrochemistry and Electrochemical Engineering Division H H Dow Memorial Student Achievement Award Address – 08:00 – 08:20
Co-Chair: John T. Vaughey

- 08:00 442 (*Industrial Electrochemistry and Electrochemical Engineering Division H H Dow Memorial Student Achievement Award Address*) Understanding the Mn-Based Oxide Electrode Materials and Beyond from First Principles and Experiment – S. Kim (Northwestern University, Massachusetts Institute of Technology), M. Aykol, V. I. Hegde, M. C. Hersam, C. Wolverton (Northwestern University), E. Lee, J. R. Croy, M. M. Thackeray (Argonne National Laboratory), J. K. Noh, K. Y. Chung, B. W. Cho (Korea Institute of Science and Technology), Y. Yu, and Y. Shao-Horn (Massachusetts Institute of Technology)

Room 609, Washington State Convention Center

Sodium-Ion Anode – 08:00 – 12:00
Co-Chairs: Xiulei Ji and Mallory Clites

- 08:00 443 Flame Made Nanopowder Processing Results in Low Temperature Sintering of β'' -Al₂O₃ Thin Films (50 μ m) with TiO₂ and ZrO₂ Addition – R. Laine, E. Yi, and E. Temeche (University of Michigan)
- 08:20 444 Investigations of Thermal Stability and SEI on Different Anodes for Sodium-Ion Battery Using Non-Flammable Ether-Based Electrolyte – K. Du, A. Rudola, and P. Balaya (National University of Singapore)
- 08:40 445 MOF-Derived Carbons As Ordered Isoreticular Structures for High Performance Sodium-Ion Battery Anode – N. Ingersoll, R. Underwood, and R. Warren (University of Utah)
- 09:00 446 Highly Defective Hard Carbon Anode for Na-Ion Batteries By Microwave Heating – Z. Li, Y. Chen, Z. Jian, H. Jiang (Oregon State University), J. Razink (University of Oregon), W. F. Stickler (Hewlett-Packard Co.), J. Neufeind (Oak Ridge National Laboratory), and X. Ji (Oregon State University)
- 09:20 447 Expanded Biomass-Derived Hard Carbon with Ultra-Stable Performance for Sodium-Ion Batteries – Y. Zhang, Z. Zhu, X. Li, and P. Dong (Kunming University of Science and Technology)
- 09:40 Break
- 10:00 448 Highly Stable Sodium Metal Batteries Enabled By High Efficiency Electrolytes – J. Zheng, S. Chen, W. Zhao, M. H. Engelhard, and J. Zhang (Pacific Northwest National Laboratory)
- 10:20 449 High Performance Na–CuCl₂ Secondary Battery Using Sulfur Dioxide Based Inorganic Liquid Electrolyte – A. Kim, H. J. Kim, D. G. Lee (Hanyang University), G. Jeong (Korea Electronics Technology Institute), Y. J. Kim (SKKU Advanced Institute of Nanotechnology (SAINT)), and H. Kim (Hanyang University)

- 10:40 450 Solid Electrolyte Interphase and Nitrogen Doping Effect on Potassium Storage Mechanism in Graphite – H. Wang, J. Liu (Nanyang Technological University, Singapore), and Z. Shen (NANYANG TECHNOLOGICAL UNIVERSITY)
- 11:00 451 Effect of Halide Doping on the Structure and Properties of Na₃SbS₄ Solid Electrolyte – H. Wang, T. M. Schultze, L. Kang, R. Dewees (University of Louisville), and Z. D. Hood (Oak Ridge National Laboratory)
- 11:20 452 Organic/Inorganic Hybrid Layered Electrodes Via Chemical Pre-Intercalation Approach for Intercalation Cathodes – M. Clites and E. Pomerantseva (Drexel University)
- 11:40 453 Enabling High Initial Coulombic Efficiency of Hard Carbon By a Pre-Lithiation Treatment for Sodium-Ion Batteries – B. Xiao, M. H. Engelhard, D. Reed, V. Sprenkle, and X. Li (Pacific Northwest National Laboratory)

Room 608, Washington State Convention Center

Energy Technology Division Graduate Student Award Address – 08:20 – 08:40
Co-Chair: John T. Vaughey

- 08:20 454 (*Energy Technology Division Graduate Student Award Address sponsored by Bio-Logic*) Understanding Crosstalks in Li-Ion Cells – D. Xiong (Shenzhen Capchem Technology Co., Ltd., China), L. Ellis (Dalhousie University), R. Petibon (Dep. of Chemistry, Dalhousie University), and J. R. Dahn (Dalhousie University)

Lithium-Ion Anode 2 – 08:40 – 12:00**Co-Chairs: Wenquan Lu, Stephen E. Trask, and Claire Xiong**

- 08:40 455 Effect of Electrolyte Composition on the Solid Electrolyte Interface (SEI) and Electrochemical Cycling of Lithium Metal Anodes – B. L. Lucht, Z. L. Brown, and S. Jung (University of Rhode Island)
- 09:00 456 In-Situ Diagnostics of Coupled Electrochemical-Mechanical Failures of Solid Electrolyte Interphases on Lithium Metal for Rechargeable Batteries – X. Xiao (General Motors, R&D Center), J. Xu, B. Li (General Motors R&D Center), and Q. Zhang (General Motors)
- 09:20 457 Extending Lifespan of Lithium Metal Electrodes Via Surface Structure Regulation Strategies – Z. Peng, Z. Zhang, M. Wang, F. Ren (Ningbo Institute of Industrial Technology.), and D. Wang (Ningbo Institute of Material Technology and Engineering.)
- 09:40 458 Silicon-Tin Sputtered Anodes for Solid-State Lithium-Ion Batteries – H. Oh (University of Colorado) and S. Lee (University of Colorado at Boulder)
- 10:00 459 Low-Cost and High-Performance Anode in Li Ion Batteries with Si Nanopowder Fabricated from Swarf – T. Matsumoto (ISIR, Osaka University), K. Kimura (ISIR, Osaka Univ.), and H. Kobayashi (ISIR, Osaka University)

- 10:20 **460** Capacity Fading Mechanism of Silicon Monoxide As the Anode for Lithium-Ion Batteries – L. Zhang, Y. Qin (Argonne National Laboratory), Y. Liu (Center for Nanoscale Materials), Q. Liu (Argonne National Laboratory), Y. Ren (Advanced Photon Source, Argonne National Laboratory), and W. Lu (Argonne National Laboratory)
- 10:40 **461** Lithiation Effect of the Poly(Acrylic Acid) Binders on the Silicon Anode of Lithium-Ion Batteries – B. Hu (Argonne National Laboratory), S. Jiang (University of Tennessee, Knoxville, Argonne National Laboratory), J. Zhang, Z. Zhang, and L. Zhang (Argonne National Laboratory)
- 11:00 Break
- 11:20 **462** Fluoroethylene Carbonate-Based Organic Electrolyte Solution for Very Stable Lithium Metal Stripping–Plating at a High Rate and High Areal Capacity – D. Aurbach (Bar-Ilan University), E. Markevich, and G. Salitra (Bar Ilan University)
- 11:40 **463** Multiscale In-Situ and Ex-Situ Microscopy and Spectroscopy Diagnosis Guided Designing of Electrode Materials for Better Battery – C. Wang (Pacific Northwest National Laboratory)

Room 609, Washington State Convention Center

Solid Electrolytes – 13:00 – 18:00

Co-Chairs: Jon Mark Weller and Neil P. Dasgupta

- 13:00 **478** Synthesis of Li-Ion Conducting Garnet $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ Powders in Molten Salt Media: Implications for Future Li-Ion Batteries – J. M. Weller and C. K. Chan (Arizona State University)
- 13:20 **479** Surface Chemistry Mechanism of Ultra-Low Interfacial Resistance in the Solid-State Electrolyte $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ – A. Sharafi, E. Kazyak, A. L. Davis, S. Yu, T. Thompson, D. J. Siegel, N. P. Dasgupta, and J. Sakamoto (University of Michigan, Ann Arbor)
- 13:40 **480** Intrinsic Improvement of LLZO Solid-State Electrolyte to Suppress Li Dendrite Growth – Y. Arinicheva (Forschungszentrum Jülich GmbH, IEK-1), H. Zheng (Forschungszentrum Jülich GmbH, IEK-1, Shanghai Jiao Tong University), C. L. Tsai (Forschungszentrum Jülich GmbH (IEK-1), Helmholtz Institute Münster (IEK-12)), J. Nonemacher, J. Malzbender (Forschungszentrum Jülich GmbH, IEK-2), D. Fattakhova-Rohlfing (Forschungszentrum Jülich GmbH, IEK-1), O. Guillon (Forschungszentrum Jülich GmbH, IEK-1, Jülich Aachen Research Alliance, JARA-Energy), and M. Finsterbusch (Forschungszentrum Jülich GmbH, IEK-1, Helmholtz Institute Münster, IEK-12)
- 14:00 **481** Improvement of Electrochemical Performance for All-Solid-State Batteries By Surface Oxidation of Sulfide Solid Electrolyte – I. Sasaki, T. Komori, K. Honda, and J. Hibino (Panasonic Corporation)
- 14:20 Discussion
- 14:40 **482** Effect of Grain Size on the Mechanical, Conductivity and Electrochemical Behavior of Cubic $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ – J. Wolfenstine (Army Research Laboratory)
- 15:00 **483** (Invited) Stability and Kinetics of the Li/Solid-State Electrolyte Interface – J. Sakamoto, A. Sharafi (University of Michigan, Ann Arbor), J. Wolfenstine (U.S. Army Research Laboratory), N. J. Taylor, M. Wang (University of Michigan), D. J. Siegel, and N. P. Dasgupta (University of Michigan, Ann Arbor)
- 15:40 **484** Highly Ion-Conducting New Lithium Halide Solid Electrolytes for Bulk-Type All-Solid-State Batteries – T. Asano, A. Sakai, S. Ohuchi, M. Sakaida, A. Miyazaki, and S. Hasegawa (Advanced Research Division, Panasonic Corporation)
- 16:00 **485** Maximizing Ionic Mobility By Lattice Disorder in Anti-Perovskite Solid Electrolytes – K. Kim and D. J. Siegel (University of Michigan, Ann Arbor)
- 16:20 Break
- 16:40 **486** Grain Boundary Contributions to Li-Ion Transport in the Solid Electrolyte $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ – S. Yu and D. J. Siegel (University of Michigan, Ann Arbor)
- 17:00 **487** Computational Modeling of Solid State Lithium-Ion Battery Architectures: Opportunities and Challenges – C. L. Cobb (University of Washington) and S. Allu (Oak Ridge National Laboratory)
- 17:20 **488** Understanding Chemical Stability Issues between Different Solid Electrolytes in All-Solid-State Batteries – N. Rippaus (BMW AG, Technische Universität München), B. Stiaszny, S. J. Sedlmaier (BMW AG), H. Beyer, and H. A. Gasteiger (Technische Universität München)
- 17:40 **489** Improvement of Power Characteristics of Thin Film Battery By $\text{Li}_3\text{PO}_4\text{-Li}_4\text{SiO}_4$ Electrolyte – S. Sasaki, A. Suzuki, and T. Jimbo (ULVAC, Inc.)

Room 608, Washington State Convention Center

Lithium-Ion Anode 3 – 13:00 – 18:00

Co-Chairs: Wenquan Lu, Stephen E. Trask, and Claire Xiong

- 13:00 **464** Quantifying Gas Generation during Silicon-Electrode Slurry Preparation By the Archimedes Method – S. E. Trask (Argonne National Laboratory), M. T. F. Rodrigues (Rice University, Argonne National Laboratory), B. J. Polzin, A. N. Jansen (Argonne National Laboratory), I. A. Shkrob (Chemical Sciences and Engineering Division), and D. P. Abraham (Argonne National Lab)
- 13:20 **465** An Approach to Characterize and Clarify Hysteresis Phenomena of Lithium-Silicon Electrodes – M. W. Verbrugge, D. R. Baker, and X. Xiao (General Motors, R&D Center)
- 13:40 **466** Understanding the Role of Li Inventory on Capacity Fade in Silicon Containing Anodes – W. M. Dose, V. A. Maroni, M. J. Piernas-Muñoz, Y. Cui, I. Bloom, and C. Johnson (Argonne National Laboratory)

14:00	467	PEDOT:PSS Electroactive Binder for Silicon Nanoparticles in Li-Ion Battery Applications – A. Mery (Univ. Grenoble Alpes, CEA, CNRS, INAC, SyMMES, Grenoble), P. Bernard, M. Chandesris, C. Haon (Univ. Grenoble Alpes, CEA, LITEN, Grenoble), J. P. Alper, N. Herlin (Université Paris Saclay, IRAMIS, UMR NIMBE, CEA Saclay), F. Duclairoir, and S. Sadki (Univ. Grenoble Alpes, CEA, CNRS, INAC, SyMMES, Grenoble)
14:20	468	First-Principles Approach to Lithium Diffusion in Silicon – V. Kumar, D. Di Stefano, G. M. Rignanese, and X. Gonze (Université Catholique de Louvain)
14:40	469	Using in-Situ Neutron Reflectivity to Probe Solid Electrolyte Interface Formation As a Function of Polymer Binder on Si-Anodes – K. L. Browning (Oak Ridge National Laboratory, University of Tennessee), J. F. Browning, and G. M. Veith (Oak Ridge National Laboratory)
15:00	470	Low Temperature Carbon and Glass Coating of SiO as Anode Material for High Performance Lithium-Ion Batteries – G. Liu (Lawrence Berkeley National Laboratory) and S. Fang (Nanjing University of Aeronautics and Astronautics)
15:20	471	Amorphous Nanoporous Niobium Oxide Electrodes for Lithium-Ion Batteries – P. Barnes, K. Dixon, L. Rill, D. Karsann, and C. Xiong (Boise State University)
15:40		Break
16:00	472	Surface Chemical Modification of Si Nanoparticles for Application in Si-Based Anode – S. Jiang (Argonne National Laboratory, University of Tennessee, Knoxville), B. Hu (Argonne National Laboratory), A. Tornheim (Chemical Sciences and Engineering Division), L. Zhang (Joint Center for Energy Storage Research (JCESR)), B. Zhao (University of Tennessee, Knoxville), and Z. Zhang (Chemical Sciences and Engineering Division)
16:20	473	A Film Maturation Process for Improving the Cycle Life of Calendered Silicon Negative Electrodes – Z. Karkar, C. Reale Hernandez, A. Tranchot (INRS-EMT), A. Etienne (Institut Jean Lamour), D. Mazouzi (University of Sidi Mohamed Ben Abdellah), E. Maire (Laboratoire MATEIS, INSA-Lyon), D. Guyomard (IMN, CNRS/University of Nantes), L. Roué (INRS-EMT), and B. Lestriez (IMN, CNRS/University of Nantes)
16:40	474	Macro- and Micro-Porous Biomass Derived Carbon for Various Energy Storage Application – K. Kim, J. P. Youngblood, and V. G. Pol (Purdue University)
17:00	475	Effect of Electrolyte Compositions on Cycling Performance of Li-Ion Full Cells with Si-Graphite Composite Electrodes – K. Kalaga, K. Z. Pupek, I. A. Shkrob, S. E. Trask (Argonne National Laboratory), and D. P. Abraham (Argonne National Lab)
17:20	476	Preparation of Composites of Nano-Silicon and Spherical Natural Graphite for Li-Ion Batteries By a Drop-in Technology – M. Toupin, V. Gauthier, F. Perrin-Sarazin, X. Zhao, O. Naboka, C. H. Yim, J. Y. Huot, and Y. Abu-Lebdeh (National Research Council Canada)

Ballroom 6ABC, Washington State Convention Center

A03 Wednesday Poster Session – 18:00 – 20:00

Co-Chairs: Jihui Yang and John T. Vaughan

•	490	Performance of Magnesium Sulfur Battery Using Sulfur Nanoparticle in 3D Carbon Cloth Cathode – D. Muthuraj (Indian Institute of Technology Bombay) and S. Mitra (Indian Institute of Technology Bombay)
•	491	Fabrication Characteristics of Thin Solid Composite Electrolyte Film Sheet for Solid-State Lithium Battery – H. M. Ryu (Korea Institute of Industrial Technology(KITECH)), M. Y. Kim (Korea Institute of Industrial Technology), D. H. Kim (KITECH), H. Y. Jung (Korea Institute of Industrial Technology(KITECH)), S. J. Park (Korea Institute of Industrial Technology (KITECH)), H. J. Ban (Korea Institute of Industrial Technology(KITECH)), Y. A. Kim (Chonnam National University), and H. S. Kim (Korea Institute of Industrial Technology (KITECH))
•	492	A Strategy of Selective and Dendrite-Free Lithium Deposition for Lithium Batteries – J. Xiang and L. Yuan (Huazhong University of Science and Technology)
•	493	All-Organic Rechargeable Battery with Reversibility Supported By “Water-in-Salt” Electrolyte – X. Dong, Y. G. Wang, and Y. Y. Xia (Fudan University)
•	494	New Insights into Anionic Redox Reaction and Performance Degradation of Iron-Based Layered Oxides Cathode Materials for Sodium-Ion Batteries – D. Susanto (Korea Institute of Science and Technology, KIST School-Korea University of Science and Technology), G. Ali (Korea Institute of Science and Technology), and K. Y. Chung (Korea Institute of Science and Technology, KIST School-Korea University of Science and Technology)
•	495	An Orthogonal Investigation of Sulfur Modified $\text{Li}_2\text{FeSiO}_4$ for Lithium Ion Batteries – X. Luo, P. Wang, X. Cheng, Y. Zhang, and L. Huang (Xiamen University)
•	496	Investigation of CO_2 Reduction Products in Lithium Ion Batteries Using Model Systems – S. K. Heiskanen (The University of Rhode Island) and B. L. Lucht (University of Rhode Island)
•	497	Constructing Sulfone Based Electrolyte System for High Energy Density Li-S Batteries – W. Shin (Oregon State University), W. F. Stickle (Hewlett-Packard Co.), and X. Ji (Oregon State University)
•	498	NMR Diffusion Study of Ionic Liquids and Ionogels for Use in Lithium Ion Batteries – N. K. Jayakody, M. Gobet, S. Greenbaum (Department of Physics and Astronomy, Hunter College, CUNY), D. Ashby, and B. S. Dunn (University of California, Los Angeles)
•	499	Electrochemical Properties and Interfacial Behavior of All Solid State Batteries Using $\text{Li}_{10}\text{SnP}_2\text{S}_{12}$ Solid Electrolyte – C. Vinado, S. Wang, Y. Li (University of Washington), X. Xiao (General Motors, R&D Center), and J. Yang (University of Washington)

- **500** Catalytic Activities of MnO₂/RuO₂/Carbon Nanocomposites for Li-O₂ Battery Application – K. S. Nahm, A. Arul, K. U. Moon, and H. Park (Chonbuk National University)
- **501** An Asymmetric Boron-Centered Ionic Additive Enables High-Energy Density Lithium-Ion Batteries – J. G. Han (Ulsan National Institute of Science and Technology)
- **502** Synthesis and Electrochemical Properties of ZnO Nanotube Materials – H. S. Kim and J. H. Kim (Kookmin University)
- **503** Fabrication of Li-Polymer/Silica Aerogel Nanocomposite Electrolyte for an All-Solid-State Lithium Battery – Y. S. Lim, M. Y. Yoon (Inha University), and H. J. Hwang (INHA University)
- **504** A Binder-Free Carbon-RuO₂ Composite Cathode for Rechargeable Li-O₂ Batteries – H. S. Shin (Korea Institute of Energy Research, Yonsei University), K. N. Jung (Korea Institute of Energy Research), J. H. Hwang (Hongik University), and J. W. Lee (Chosun University)
- **505** High-Energy Density LiNiO₂ Core-Li[Ni_{0.87}Co_{0.065}Mn_{0.065}]O₂ shell Structured Li[Ni_{0.95}Co_{0.025}Mn_{0.025}]O₂ Cathode for Lithium-Ion Batteries – U. H. Kim and Y. K. Sun (Department of Energy Engineering, Hanyang University)
- **506** Optimization of Li-O₂ Batteries Using Bi Compartment Cells to Separate and Improve Each Electrode Condition – H. Kim and Y. K. Sun (Department of Energy Engineering, Hanyang University)
- **507** Microwave Synthesized TiP₂O₇/Carbon Composites for Use in Aqueous Lithium-Ion Batteries – H. Song (Carnegie Mellon University), J. Chang (West Virginia University), J. Wu, W. Wu, and J. Whitacre (Carnegie Mellon University)
- **508** Surface Modification of Na_{0.44}MnO₂ Positive Electrode Material Via Nano-Al₂O₃ for Aqueous Sodium-Ion Batteries – J. Wu (Carnegie Mellon University), J. Chang (West Virginia University), H. Song, W. Wu, and J. Whitacre (Carnegie Mellon University)
- **509** Ammonium Intercalation Chemistry in Prussian Blue Analogues for Energy Storage – X. Wu (Oregon State University), Y. Qi (Oregon state University), J. Hong, H. Jiang (Oregon State University), A. Hernandez (Oregon state University), and X. Ji (Oregon State University)
- **510** Synthesis and Characterization of Carbon Coated LiCoPO₄ As Cathode Materials for Lithium Ion Batteries – Y. Li and I. Taniguchi (Tokyo Institute of Technology)
- **512** Performance Study of Free-Standing Cathode Made with LiFePO₄ and Sorted Single-Walled Carbon Nanotubes Composite Material – A. A. Adepoju, T. A. Searles (Howard University), J. A. Fagan (National Institute of Standards and Technology), and Q. L. Williams (Howard University)
- **513** Rationally-Designed Solvate Ionogel Electrolytes for Improved Lithium-Sulfur Battery Performance – D. Hubble, J. Qin, F. Lin, I. A. Murphy, Y. Li, J. Yang, and A. Jen (University of Washington)
- **514** Dispersion Effect of LaPO₄ Particles in Lithium Ion Conductor LATP – S. Takai, M. Uematsu (Graduate School of Energy Science, Kyoto University), W. J. Chen (National Yunlin University of Science & Technology), T. Yabutsuka (Graduate School of Energy Science, Kyoto University), and T. Yao (National Institute of Technology, Kagawa College)
- **515** Electrocatalysis of Polysulfide Redox in Lithium-Sulfur Battery – N. K. Thangavel, N. Masurkar, A. R. Sawas, and L. Arava (Wayne State University)
- **516** Aromatic Polyimide Based Composites for Ultrafast and Sustainable Lithium Ion Batteries – H. Lyu (Oak Ridge National Laboratory), J. Liu (Shandong University), S. Mahurin, S. Dai (Oak Ridge National Laboratory), Z. Guo (University of Tennessee Knoxville), and X. G. Sun (Oak Ridge National Laboratory)
- **517** Fundamental Chemistry Behind Rechargeable Li-Based Batteries and Beyond: Theoretical and Computational Chemistry Approach – S. P. Dubey, W. D. Widanage, A. McGordon (University of Warwick), and J. Marco (WMG - University of Warwick)
- **518** Π-π Interaction Enabling Highly Stable Li-Organic Batteries with Graphene Oxide Based Separators – C. Fang (Huazhong University of Science and Technology), Y. Wang, R. Zhao (Tongji University), and Y. Huang (laboratory of Energy Storage and Conversion)
- **519** Tungsten Oxide for Proton Batteries and Its Storage Mechanism – H. Jiang, J. Hong, X. Wu, and X. Ji (Oregon State University)
- **520** Zn/MnO₂ Battery Chemistry with H⁺ and Zn²⁺ Co-Insertion – W. Sun (University of Maryland, MD, USA), F. Wang (U.S.Army Research Lab), and C. Wang (University of Maryland, College Park)
- **521** Pure Hydrocarbon Cathodes for Dual-Ion Batteries – a Trend – I. A. Rodríguez Pérez, X. Ji, R. G. Carter, M. M. Lerner (Oregon State University), and C. Bommier (Princeton University)
- **522** UV Photopolymerization of Vinyl Ether Based Polymer Electrolytes for Solid-State Lithium Batteries – M. Becker and W. Tenhaeff (University of Rochester)
- **523** Redox-Mediated Iron Phthalocyanine Hybrid Electrocatalyst for Lithium-Oxygen Battery Application – K. S. Nahm (Chonbuk National University)
- **524** Highly Stable Triclinic Polymorph in Nanoscale Na_{2-2x}Co_{1+x}P₂O₇/C for High-Voltage Na-Ion Battery Cathode – H. J. Song, J. C. Kim, and D. W. Kim (Korea University)
- **525** Structural Stability of LiNiO₂ Cycled at Different Cut-Off Voltages (4.1, 4.2, and 4.3V) – S. M. Park and Y. K. Sun (Department of Energy Engineering, Hanyang University)
- **526** Heat Generation Measurement of Li-Ion Battery Cells Under Fast Charging Conditions By Employing Isothermal Calorimeter – S. S. Madani (AAU)
- **527** Ruthenium Bromide for High Efficiency Li-O₂ Batteries – S. H. Lee and Y. K. Sun (Department of Energy Engineering, Hanyang University)

- **528** Hierarchical Porous Carbon Spheres As an Effective Air Electrode for Li-O₂ Batteries – M. G. Jeong and H. G. Jung (Korea Institute of Science and Technology)
- **529** Imaging of Representative Volumes in Battery Electrodes and Direct Visualization of Lithium Atoms: Recent Advances in Electron Microscopy – H. Lemmens (Thermo Fisher Scientific)
- **530** Electrochemical Studies of the Pink-Phase Cu(im)₂ (imH = imidazole) As a Cathode Material for Li-Ion Batteries – H. Zhou (University of Arkansas), Z. Liu (Dalian University of Technology), S. S. Ang (University of Arkansas), and J. J. Zhang (Dalian University of Technology)
- **531** Comparative Study Nickel Rich Layered Oxides: NMC 622, NMC 811 and NCA Cathode Materials for Lithium Ion Battery – F. Omenya (Binghamton University), N. A. Chernova (NECCES at Binghamton University), H. Zhou (Binghamton University), C. Siu, and M. S. Whittingham (NECCES at Binghamton University)
- **532** State-of-Health Estimation of Lithium-Ion Batteries Based on Partial Charging Voltage Profiles – D. I. Stroe, V. Knap, and E. Schaltz (Department of Energy Technology, Aalborg University)
- **533** Enhanced Thermal Resistance and Electrochemical Performance of the Trilayered PP/PE/PP Separators Using Alumina Coating for Lithium-Ion Batteries – C. C. Liao, C. C. Fu, and R. S. Juang (Chang Gung University)
- **534** Thin Conductive Conformal Coating on Prepared Electrode for High Performance Lithium-Ion Battery – J. Ahn, E. K. Jang, and K. Y. Cho (Hanyang University)
- **535** Carbon-Based Materials As Interlayers for High-Performance Lithium-Sulfur Batteries – S. Kaenket, P. Chiochan, and M. Sawangphruk (Vidyasirimedhi Institute of Science and Technology)
- **536** Improving the Electrochemical Properties By Adding a Catalyst-Embedded Interlayer in the Lithium Sulfur Batteries – S. H. Cho and W. Y. Yoon (Korea University)
- **537** A Polyimide Based on 3,4,9,10-Perlenetetracarboxylic Dianhydride(PTCDA) As High Performance Cathode for Sodium Ion Batteries – T. Gu, M. Zhou, K. Wang, and K. Jiang (Huazhong University of Science and Technology)
- **538** Reduce Graphene Oxide Micro-Ball Containing High Sulfur Nanoparticle Content for High Performance Lithium-Sulfur Batteries – J. Yeon (SUNGKYUNKWAN University), S. Yun, and H. S. Park (SungKyunKwan University)
- **539** Lithium-Sulfur Batteries: The Effect of High Sulfur Loading on the Electrochemical Performance – E. Cha, M. D. Patel, T. Y. Choi, and W. Choi (University of North Texas)
- **540** Wettability between Controlled MWCNT-S Cathode and Electrolyte for High Performances of Lithium-Sulfur Batteries – S. Shin, J. Y. Hwang, H. M. Kim, and Y. K. Sun (Department of Energy Engineering, Hanyang University)
- **541** P2-Type Layered Cathode Materials for Sodium-Ion Rechargeable Batteries with High Initial Coulombic Efficiency – J. Y. Eom, S. I. Kim, and S. E. Yoo (Korea Automotive Technology Institute)
- **542** Study on the Interface between NCM Layered Cathodes and Sulfide-Based Solid Electrolytes in All-Solid-State Batteries – B. N. Yun, H. Kim, and H. G. Jung (Korea Institute of Science and Technology)
- **543** Resolving the Degradation Mechanism of the O3-Type Layered Oxide Cathode Surface through the Nano-Size Aluminum Oxide Coating for High-Energy Density Sodium-Ion Batteries – J. Y. Hwang and Y. K. Sun (Department of Energy Engineering, Hanyang University)
- **544** Empirical Investigations of Micro-Pattern Morphology Effect on Lithium Metal Anodes – J. Ahn, E. K. Jang, J. Im, and K. Y. Cho (Hanyang University)
- **545** Effects of Surface Treatments of Lithium Metal for All Solid Lithium Batteries – S. J. Park (Korea Institute of Industrial Technology (KITECH)), M. Y. Kim (Korea Institute of Industrial Technology), D. H. Kim, H. Y. Jung (KITECH), H. M. Ryu (Korea Institute of Industrial Technology (KITECH)), H. J. Ban (Korea Institute of Industrial Technology(KITECH)), Y. A. Kim (Chonnam National University), and H. S. Kim (Korea Institute of Industrial Technology (KITECH))
- **546** Advanced Current Collectors Towards Stable Li Metal Anode – S. Wu (City University of Hong Kong)
- **547** New Artificial Interphase with Li-Ion Pathway between Li Metal and Electrolytes for Secure Lithium Metal Anodes – J. I. Lee, M. Shin, and S. Park (Ulsan National Institute of Science and Technology)
- **548** Sulfone-Based Electrolytes for Highly-Efficient and Stable Lithium Metal Anode – X. Ren, S. Chen, M. H. Engelhard, S. D. Burton, Q. Li (Pacific Northwest National Laboratory), M. S. Ding, M. Schroeder, J. Alvarado, K. Xu (U.S. Army Research Laboratory), J. Liu, J. G. Zhang, and W. Xu (Pacific Northwest National Laboratory)
- **549** Stable and Dense Sodium Metal Deposition Using a Fluorination Solvent Containing Electrolyte with a 1 M Salt Concentration – Y. Lee (Ulsan National Institute of Science and Technology)
- **550** The Use of Mixed Organic/Ionic Liquid Electrolytes with Forcespun Metal Oxides/Carbon Microfiber Electrodes in Lithium Ion Batteries – J. Villarreal (University of Texas Rio Grande Valley), L. Zuniga (The University of Texas Rio Grande Valley), A. Valdez, and M. Alcoutlabi (University of Texas Rio Grande Valley)
- **551** Highly Stable Sodium Metal Interphase in NaAlCl₄-2SO₂ Inorganic Electrolyte for Room-Temperature Sodium Rechargeable Battery Anode – H. J. Kim, J. Song, A. Kim, Y. E. Kim (Hanyang University), G. Jeong (Korea Electronics Technology Institute), and H. Kim (Hanyang University)

- **552** Controlled Surface Structure and Chemistry with Transition Metal Enrichment for Cathode Materials – B. W. Cho, J. Ahn, S. H. OH (Korea Institute of Science and Technology), and K. Y. Chung (KIST School-Korea University of Science and Technology)
- **553** Material-Dependent Solid Electrolyte Interphase Formation Behavior of Artificial Graphite Battery Anodes – H. Q. Pham (Chungnam National University, Republic of Korea), B. J. Kim (Research Institute of Industrial Science and Technology), H. Jo (Chungnam National University, Republic of Korea), S. Kang (Research Institute of Industrial Science and Technology), S. J. You (Research Institute of Industrial Science & Technology), and S. W. Song (Chungnam National University, Republic of Korea)
- **554** The High Performance Silicon Anodes Including New Water Based Binder in Lithium Ion Batteries – S. J. KIM, N. S. Kim, and K. S. Choi (Aekyung Chemical Company)
- **555** Surface Functionalization of Silicon Nanoparticles with Citric Acid for Enhanced Performance As Lithium Ion Battery Anodes – B. L. Lucht (University of Rhode Island), D. K. Chandrasiri (University of Rhode Island, Department of Chemistry), S. Jurng, B. Subramanian Parimalam, C. C. Nguyen (University of Rhode Island), B. Young (Rhode Island College), and D. Heskett (University of Rhode Island, Department of Physics)
- **556** MoS₂ and MoO₂ loaded Carbon Microfibers As Anode Materials for Lithium-Ion and Sodium-Ion Batteries – A. Valdez (University of Texas Rio Grande Valley), L. Zuniga (The University of Texas Rio Grande Valley), and M. Alcoutlabi (University of Texas Rio Grande Valley)
- **557** Modified Ca-Graphite Intercalation Compounds As Anode Material for Li Ion Batteries – R. Miyamae, G. Tei, and A. Kano (Advanced Research Division, Panasonic Corporation)
- **558** Investigating the Reaction Mechanism of Sodium Insertion/Extraction in SnF₂ Anode Material – G. Ali and K. Y. Chung (Korea Institute of Science and Technology)
- **559** Porous Sb-Si-C Composite As a High-Performance Anode Material for Lithium Ion Batteries – H. Seo (Kookmin University) and J. H. Kim (Kookmin University)
- **560** Ball Milling Synthesis of Silicon Monoxide Anode Materials for Li-Ion Batteries – J. Hwang (Kookmin Univ.), K. Kim, and J. H. Kim (Kookmin University)
- **561** Scalable Sponge-like Silicon Nanostructures-Based Anodes for High-Capacity Lithium Ion Batteries – D. Schneier, E. Peled, F. Patolsky, D. Golodnitsky, S. Menkin, G. Davidi, N. Harpak, and E. Mados (School of Chemistry, Tel Aviv University)
- **563** Mechanochemically Reduced Si/SiO_x Nanospheres As a High Capacity Anode Material for Lithium-Ion Battery – Y. E. Kim, E. Park, D. S. Kim, A. Kim, and H. Kim (Hanyang University)

- **564** Scalable Preparation of Porous Silicon Anode Material By Nontoxic Wet Etching for High-Performance Lithium-Ion Batteries – D. G. Lee, M. Sohn, H. I. Park, D. S. Kim, H. J. Kim, and H. Kim (Hanyang University)
- **565** Micro-Size Carbon-Free Iron Sulfides As Advanced High Tap Density Anode Materials for Rechargeable Li- and Na-Ion Batteries – T. Yu and Y. K. Sun (Department of Energy Engineering, Hanyang University)
- **566** Si Anode Materials for Li-Ion Batteries – K. J. Carroll, B. Li, and D. Strand (Wildcat Discovery Technologies)

B03 **Carbon Nanotubes - From Fundamentals to Devices**
Nanocarbons / Physical and Analytical Electrochemistry
Room 205, Washington State Convention Center

Chemistry 1 – 08:00 – 11:00

Co-Chairs: Xiaowei He and Ardemis Anoush Boghossian

- | | | |
|-------|------------|---|
| 08:00 | 713 | <i>(Invited)</i> Endohedral Filling Effects for Single-Wall Carbon Nanotubes As a Function of Filler Molecule and Nanotube Size – J. A. Fagan (National Institute of Standards and Technology) |
| 08:20 | 714 | <i>(Invited)</i> Degradable Conjugated Polymer with Exceptional Selectivity for Large Diameter Semiconducting Carbon Nanotubes – P. Gopalan (University of Wisconsin), C. Kanimozhi, M. J. Shea, G. J. Brady, and M. S. Arnold (University of Wisconsin-Madison) |
| 08:40 | 715 | Noncovalent Chemistry of SWNTs Inside-Out – E. M. Perez (IMDEA Nanociencia) |
| 09:00 | 716 | <i>(Invited)</i> Functionalization of Carbon Nanotubes in a Micellar Environment – L. Orcin-Chaix (Aimé Cotton laboratory), G. Delpont (Laboratoire Aimé Cotton, ENS Cachan), S. Campidelli (CEA-Saclay), C. Voisin (Ecole Normale Supérieure), and J. S. Lauret (Laboratoire Aimé Cotton, ENS Paris Saclay) |
| 09:20 | 717 | <i>(Invited)</i> Light-Directed Creation of Quantum Defects – X. Wu, M. Kim, L. R. Powell, and Y. Wang (University of Maryland) |
| 09:40 | | Break |
| 10:00 | 718 | <i>(Invited)</i> Substituted Aryl Structure Effects on Photoluminescence Properties of Locally Functionalized Single-Walled Carbon Nanotubes – T. Shiraki (Department of Applied Chemistry, Kyushu University), S. Uchimura, T. Shiraishi (Department of Applied Chemistry, Kyushu University), F. Toshimitsu, and N. Nakashima (WPI-I2CNER, Kyushu University) |
| 10:20 | 719 | Constraining Photoluminescent Defect States in Chirality-Sorted Covalently Doped Single-Walled Carbon Nanotubes – A. Saha, X. He (MPA-CINT, Los Alamos National Laboratory), G. Ao, M. Zheng (National Institute of Standards and Technology), S. Tretiak, H. Htoon, and S. K. Doorn (MPA-CINT, Los Alamos National Laboratory) |
| 10:40 | 720 | <i>(Invited)</i> Functional Hybrids of Single-Walled Carbon Nanotubes Via π -Preserving Covalent Attachment – S. Reich (Freie Universitaet Berlin) |

Optics 1 – 11:00 – 12:20
Co-Chair: Delphine Bouilly

- 11:00 721 *(Invited)* Room-Temperature Single Photon Emission from Micrometer-Long Air-Suspended Carbon Nanotubes – A. Ishii (RIKEN), T. Uda (RIKEN, University of Tokyo), and Y. K. Kato (RIKEN)
- 11:20 722 *(Invited)* Interplay of Spectral Diffusion and Phonon Broadening in Carbon Nanotubes: Implications for Quantum Optics – T. Claude (Universite Paris Diderot, Ecole Normale Supérieure), A. Jeantet (Ecole Normale Supérieure, Université Paris Diderot), J. S. Lauret (Laboratoire Aimé Cotton, ENS Paris Saclay), Y. Chassagneux (CNRS, Ecole Normale Supérieure), and C. Voisin (Ecole Normale Supérieure, Université Paris Diderot)
- 11:40 723 Quantum Optical Studies on Sp^3 Defects in Carbon Nanotubes – X. He, H. Htoon, and S. K. Doorn (MPA-CINT, Los Alamos National Laboratory)
- 12:00 724 *(Invited)* Aryl-Functionalized Single-Walled Carbon Nanotubes Embedded into Metallo-Dielectric Antennas – K. Shayan (Stevens Institute of Technology), X. He (MPA-CINT, Los Alamos National Laboratory), Y. Luo, X. Li (Stevens Institute of Technology), J. L. Blackburn (National Renewable Energy Laboratory), S. K. Doorn (Los Alamos National Laboratory), H. Htoon (MPA-CINT, Los Alamos National Laboratory), and S. Strauf (Stevens Institute of Technology)

Optics 2 – 14:00 – 16:00
Co-Chair: Stefan Strauf

- 14:00 725 *(Invited)* Biological Imaging Using up-Conversion Photoluminescence of Carbon Nanotubes – Y. Miyauchi (Institute of Advanced Energy, Kyoto University, Graduate School of Science, Nagoya University)
- 14:20 726 *(Invited)* Nanoscale Imaging of Luminescent Excitons in sp^3 -Doped Ultra-Short Carbon Nanotubes – N. Danné (Univ. Bordeaux, Institut d'Optique & CNRS), M. Kim (University of Maryland), A. G. Godin (Univ. Bordeaux, Institut d'Optique & CNRS), H. Kwon (University of Maryland), Z. Gao (Institut d'Optique & CNRS, Univ. Bordeaux), X. Wu (University of Maryland), N. F. Hartmann, S. K. Doorn (MPA-CINT, Los Alamos National Laboratory), B. Lounis (Univ. Bordeaux, Institut d'Optique & CNRS), Y. Wang (Maryland NanoCenter), and L. Cognet (Institut d'Optique & CNRS, Univ. Bordeaux)
- 14:40 727 *(Invited)* Solvent and Wavelength Dependence of Carbon Nanotube Defect-State Photoluminescence Relaxation Dynamics – S. K. Doorn, X. He (MPA-CINT, Los Alamos National Laboratory), K. Velizhanin (Los Alamos National Laboratory), G. Bullard (Dept. of Chemistry, Duke University), Y. Kim, N. F. Hartmann, H. Htoon (MPA-CINT, Los Alamos National Laboratory), and M. J. Therien (Dept. of Chemistry, Duke University)
- 15:00 728 *(Invited)* Cryogenic Spectroscopy of Chemistry-Modified Carbon Nanotubes – A. Högele (Fakultät für Physik, Munich Quantum Center, Center for NanoScience (CeNS), LMU Munich)

- 15:20 729 Magneto-PL Spectroscopy in Aryl Functionalized CNTs – Y. Kim, X. He, S. K. Doorn, and H. Htoon (MPA-CINT, Los Alamos National Laboratory)
- 15:40 Break

Chemistry 2 – 16:00 – 18:00
Co-Chair: Emilio M. Perez

- 16:00 730 *(Invited)* Variance Spectroscopy Studies of Single-Walled Carbon Nanotube Aggregation – S. R. Sanchez, S. M. Bachilo, and R. B. Weisman (Rice University)
- 16:20 731 Ionic Strength-Mediated Phase Transitions of Surface-Adsorbed DNA on Single-Walled Carbon Nanotubes – D. Salem (Massachusetts Institute of Technology), X. Gong, A. T. Liu, V. Koman (MIT), J. Dong (Massachusetts Institute of Technology), and M. S. Strano (MIT)
- 16:40 732 *(Invited)* Surfactant-Exchange Equilibrium Constants for Each Semiconducting Single Wall Carbon Nanotube Type – K. J. Ziegler (Department of Chemical Engineering)
- 17:00 733 *(Invited)* Quantification of DNA/SWCNT Solvation Differences By Aqueous Two Phase Separation – A. Jagota, Y. Yang, A. Shankar (Lehigh University), T. Aryaksama (ESPCI Paris), and M. Zheng (National Institute of Standards and Technology)
- 17:20 734 Controlled Assembly of Carbon Nanotube Nanohybrids for Single-Molecule Investigations – M. Palma (Queen Mary University of London)
- 17:40 735 *(Invited)* Interfacial Functionalization of Carbon Nanostructures: From Effective Charge Propagation and Storage to Enhancement of Electrocatalytic and Bioelectrocatalytic Properties – P. J. Kulesza (University of Warsaw)

B05 Fullerenes - Endohedral Fullerenes and Molecular Carbon Nanocarbons
Room 204, Washington State Convention Center

Endohedral Fullerenes – 08:00 – 10:00
Co-Chairs: Shangfeng Yang and Alan L. Balch

- 08:00 791 *(Invited)* Uranium-Based Endohedral Fullerenes: Mono-, Di-Metallic and Cluster Compounds – L. Echegoyen (The University of Texas at El Paso), N. Chen (Soochow University), S. Fortier (University of Texas at El Paso), W. Cai (The University of Texas at El Paso), J. Murillo (Univ. of Texas at El Paso), and M. Gomez (University of Texas at El Paso)
- 08:20 792 *(Invited)* Molecular Structures and Unique Bindings of Actinide Endohedral Fullerenes – N. Chen (Soochow University), L. Echegoyen (The University of Texas at El Paso), L. Feng (Soochow University), Y. Wang (Soochow University, Suzhou, Jiangsu, (China)), and X. Zhang (Soochow University)
- 08:40 793 *(Invited)* Recent Developments Regarding Orientation Studies of Endohedral Nitrogen Fullerenes and Their Water-Solubilization – K. Porfyrakis (University of Oxford)

- 09:00 **794** *(Invited)* Molecular Structures of $\text{La}_2\text{C}_2@$
 $\text{C}_{90}\text{-C}_{104}$: The Effect of Inserting a C_2 -Unit
– X. Lu, W. Cai, and S. Zhao (Huazhong
University of Science and Technology)
- 09:20 **795** *(Invited)* Isolation and Structural
Characterization of Lu_2C_{2n} – W. Shen, X. Lu,
and F. F. Li (Huazhong University of Science
and Technology)
- 09:40 Break
- Functionalized Fullerenes – 10:00 – 12:20**
Co-Chairs: Francis D'Souza and Nazario Martin
- 10:00 **796** *(Invited)* Complexation and Electronic
Communication of Corannulene-Based
Buckybowls and a Curved Electron Donor –
N. Martín (Universidad Complutense)
- 10:20 **797** *(Invited)* Mediating Reductive Charge Shift
Reactions in Electron Transport Chains – D.
M. Guldi (Universität Erlangen-Nürnberg)
- 10:40 **798** *(Invited)* Subphthalocyanine-Fullerene
Ensembles As Light Harvesting Systems – T.
Torres, M. V. Martínez-Díaz, G. Zango, J. A.
González Delgado, V. Mariñas, and J. Labella
(Autonoma University of Madrid)
- 11:00 **799** *(Invited)* Chiral-at-Metal Fullerene Hybrids
for Catalysis – S. Filippone, R. M. Girón
(Universidad Complutense de Madrid), S.
Vidal (Universidad Complutense de Madrid),
and N. Martin (Universidad Complutense de
Madrid)
- 11:20 **800** *(Invited)* Bodipy-Nanocarbon Hybrids
for Mimicking Early Events of Natural
Photosynthesis – F. D'Souza (University of
North Texas)
- 11:40 **801** *(Invited)* Growth of Fullerene Fragments
Using the Diels-Alder Cycloaddition
Reaction – F. Méndez (Universidad Autónoma
Metropolitana), J. A. Alonso (Universidad
de Valladolid), and M. Mojica (Universidad
Autónoma Metropolitana)
- 12:00 **802** *(Invited)* Structures and Properties of Saturn-
like Complexes Composed of Oligothiophene
Macrocyclic with Methano[60]Fullerene
and [70]Fullerene – S. Aoyagi (Nagoya
City University), M. Iyoda, H. Shimizu
(Tokyo Metropolitan University), H. Okada
(The University of Tokyo), B. Zhou (Nihon
University), and Y. Matsuo (University of
Science and Technology of China)

Endohedral Fullerenes – 14:00 – 16:00

Co-Chairs: Xing Lu and Luis Echegoyen

- 14:00 **803** *(Invited)* Structural Studies of Fullerene
Cages and Cage Disorder in Crystals – M.
M. Olmstead, X. B. Powers (University of
California, Davis), and A. L. Balch (University
of California-Davis)
- 14:20 **804** *(Invited)* Synthesis and Isolation of Scandium-
Uranium Based Endohedral Fullerenes – M.
A. G. Torres, J. Murillo, W. Cai, and L.
Echegoyen (The University of Texas at El
Paso)
- 14:40 **805** *(Invited)* Chemical Isolation of Less Common
Metallofullerenes – A. J. Rothgeb, K. R.
Tepper, C. M. Davison, and S. Stevenson
(Purdue University - Fort Wayne)

- 15:00 **806** *(Invited)* Gas-Phase Clusterfullerene Doping
and Exohedral Modification By Laser-Based
Methods – P. W. Dunk, M. Mulet-Gas, A. G.
Marshall, C. L. Hendrickson (National High
Magnetic Field Laboratory/FSU), E. Castro
(University of Texas at El Paso), L. Echegoyen
(The University of Texas at El Paso), L.
Abella, A. Moreno-Vicente, A. Rodriguez-
Fortea, and J. M. Poblet (Universitat Rovira i
Virgili)
- 15:20 **807** *(Invited)* Relative Stabilities for Isomeric and
Non-Isomeric Endohedrals – F. Uhlík (Charles
University in Prague), Z. Slanina, T. Akasaka,
and X. Lu (Huazhong University of Science
and Technology)
- 15:40 Break
- Functionalized Nanocarbons – 16:00 – 18:00**
Co-Chairs: Dirk M. Guldi and Chunru Wang
- 16:00 **808** *(Invited)* Cage Skeletal Transformation
of Fullerene Via Chlorination – S. Yang
(University of Science and Technology of
China)
- 16:20 **809** *(Invited)* Synthesis and Properties of Open-
Cage Fullerene Derivatives – Y. Murata
(Institute for Chemical Research, Kyoto
University)
- 16:40 **810** *(Invited)* Intermediates Captured By C_{60}
in Combustion – S. Y. Xie (Department of
Chemistry, Xiamen University), Q. Zhang, and
S. L. Deng (Xiamen University)
- 17:00 **811** *(Invited)* Graphene Nanoribbons through
Directed Molecular Assembly and Reagent-
less Stitching – Y. Rubin, R. Jordan, Y. L. Li,
C. W. Lin, R. D. McCurdy, J. B. Lin, J. L.
Brosmer, K. L. Marsh, S. I. Khan, K. N. Houk
(University of California, Los Angeles), and
R. B. Kaner (University of California, Los
Angeles (UCLA))
- 17:20 **812** *(Invited)* Synthesis of Graphene- C_{60} Hybrids –
F. Langa (Universidad de Castilla-La Mancha)
- 17:40 **813** *(Invited)* Hierarchical Nanostructures in
Multi-Functional Electrocatalysts for the
Artificial Leaf – G. Valenti, M. Marcaccio, S.
Rapino, M. Iurlo (Dipartimento di Chimica -
Università di Bologna), M. Prato (University
of TRIESTE), P. Fornasiero (Department
of Chemical and Pharmaceutical Sciences),
and F. Paolucci (Dipartimento di Chimica -
Università di Bologna)

B06

**2D Layered Materials from Fundamental Science
to Applications**

Nanocarbons / Dielectric Science and Technology /
Electronics and Photonics / Industrial Electrochemistry and
Electrochemical Engineering
Room 201, Washington State Convention Center

Photophysics – 08:00 – 12:00

Co-Chair: Thomas Szkopek

- 08:00 **866** CVD MoS_2 Transistor Circuit for Organic
Light-Emitting Diode – H. Kwon, H. S. Lee,
and S. Im (Yonsei University)
- 08:20 **867** Flexible Graphite a Novel Platform for SERS
Detection and Outstanding EMI Shielding –
N. Sykam, N. D. Jayram, and G. Mohan Rao
(Indian Institute of Science Bangalore)

- 08:40 **868** Enhancing Light Emission Efficiency without Color Change in Post-Transition Metal Chalcogenides – C. Ataca (University of Maryland Baltimore County), J. C. Grossman (MIT), and S. Tongay (UC Berkeley)
- 09:20 **870** *(Invited)* Directing Interlayer Photocurrent Dynamics By Twisting and Stacking Van Der Waals Materials – M. W. Graham (Oregon State University)
- 09:40 Break
- 10:00 **871** *(Invited)* Aggregation-Induced Emission in Lamellar Solids of Colloidal Perovskite Quantum Wells – J. Jagielski, S. Kumar, and C. J. Shih (Institute for Chemical and Bioengineering, ETH Zürich)
- 10:20 **872** Conductivity Mapping in Graphene through Scattering-Type Scanning Near-Field Optical Microscopy in the Mid-Infrared and Terahertz Spectral Region with 25nm Spatial Resolution – N. F. Hartmann, T. Gokus, M. Eisele, and A. J. Huber (neaspec GmbH)
- 10:40 **873** *(Invited)* 2D Nanosheet Optics and (Opto-) Electronics – T. Mueller (TU Vienna, Institute for Photonics)
- 11:00 **874** *(Invited)* Out-of-Plane Polarization of 2D Layers – H. Zhu and X. Zhang (University of California, Berkeley)
- 11:20 **875** *(Invited)* Exploring Exciton Physics in Liquid-Exfoliated 2D Materials – F. Rashvand, K. Sennatschke (Applied Physical Chemistry, University Heidelberg), A. Chernikov (Department of Physics, University of Regensburg), J. N. Coleman (School of Physics and CRANN, Trinity College Dublin), and C. Backes (Applied Physical Chemistry, University Heidelberg)
- 11:40 **876** Phase Instability and Thermal Properties of Multilayered Vanadium Diselenide: DAC-Based High Pressure Studies – K. K. Mishra (University of Puerto Rico, USA), T. R. Ravindran (Indira Gandhi Centre for Atomic Research, India), K. K. Pandey (Bhabha Atomic Research Centre, India), and R. Katiyar (University of Puerto Rico, PR, USA)

Properties and Devices 1 – 14:00 – 18:00
Co-Chair: Zhihong Chen

- 14:00 **877** Photovoltage Optimization of Si Devices with a Fluorinated Graphene Interfacial Layer – A. C. Thompson and N. S. Lewis (California Institute of Technology)
- 14:20 **878** *(Invited)* Improving Conducting and Insulating Interfaces to 2D Materials – A. D. Franklin (Duke University)
- 14:40 **879** *(Invited)* Hot Electron Cooling in a Zener-Klein Graphene on BN Transistor: The Role of Hyperbolic Polaritons – W. Yang, E. Baudin (Ecole Normale Supérieure), S. Berthou (Université Paris Diderot, Ecole Normale Supérieure), B. Placais (CNRS, Ecole Normale Supérieure), and C. Voisin (Ecole Normale Supérieure)
- 15:00 **880** *(Invited)* Vertical Transport through Multi-Layer Van Der Waals Structures – J. Appenzeller (Electrical and Computer Engineering, Purdue University)
- 15:20 **881** Metal Semiconductor Field Effect Transistors with Conducting NbS₂/n-MoS₂ Van Der Waals Schottky Junction and Graphene Contact – H. G. Shin, J. Y. Lim, S. Park, and S. Im (Yonsei University)

- 15:40 Break
- 16:00 **882** Charges, Defects and Interfaces in Two-Dimensional Materials and Devices – Y. Liu (The University of Texas at Austin)
- 16:20 **883** *(Invited)* Quasi-Two-Dimensional Thermoelectricity in SnSe – T. Szkopek, G. Gervais (McGill University), and A. Grueneis (Universität zu Köln)
- 16:40 **884** *(Invited)* Theory and Device Concepts of Novel Electronic, Optoelectronic, and Topological 2D Materials – X. Qian (Texas A&M University)
- 17:00 **885** Electric Double Layer Doping of WSe₂ Field-Effect Transistors Using a Monolayer Electrolyte – J. Liang, K. Xu, and S. Fullerton (University of Pittsburgh)
- 17:20 **886** Simulation and Analysis of Phosphorene Nanoribbon Field Effect Transistors Using Non-Equilibrium Green's Function Formalism – H. Sarvari (University of Kentucky), C. Liu (Eastern Kentucky University), Z. Chen (University of Kentucky), and R. Ghayour (Shiraz University)
- 17:40 **887** Hybrid PN Diode and CMOS Inverters Composed of MoTe₂ Nanosheet-Amorphous in-Ga-Zn-O Thin Film – H. S. Lee, H. Kwon, and S. Im (Yonsei University)

B07 Inorganic/Organic Nanohybrids for Energy Conversion
Nanocarbons
Room 203, Washington State Convention Center

Nanostructure 1 – 08:00 – 10:00
Co-Chairs: Kosei Ueno and Istvan Robel

- 08:00 **921** *(Invited)* Ag-Loaded Hydroxide-Modified Solid-State Photocatalysts for Photocatalytic Reduction of CO₂ by H₂O as an Electron Donor – K. Teramura (Department of Molecular Engineering, Kyoto University)
- 08:20 **922** *(Invited)* Controlling Carrier Dynamics in Mesoscale Quantum Dot Assemblies: From Efficient Solar Cells to Ultrafast Photodetectors – I. Robel (Los Alamos National Laboratory)
- 08:40 **923** *(Invited)* Influence of Nanoscale Surface Structure of TiO₂ Single Crystal Electrode on Water Photooxidation Reaction Process – A. Imanishi (Graduate School of Engineering Science, Osaka University)
- 09:00 **924** *(Invited)* Nanostructured Conjugated Polymers As Promising Electrodes for Li-Ion Batteries – Q. Zhang (Nanyang Technological University)
- 09:20 **925** *(Invited)* Plasmon-Induced Photocurrent Generation for Exploring the Near-Field of Strongly Coupled Plasmonic Systems – K. Ueno, J. Guo, X. Shi, T. Oshikiri (Hokkaido University), and H. Misawa (National Chiao Tung University, Hokkaido University)
- 09:40 Break

Nanostructure 2 – 10:00 – 12:00
Co-Chairs: Frank E. Osterloh and Toshiharu Teranishi

- 10:00 **926** *(Invited)* Near Infrared Plasmon-Induced Charge Separation in Heterostructured Nanoparticles – T. Teranishi (Kyoto University)
- 10:20 **927** *(Invited)* Controlling Energy Flow in Plasmonic Photocatalysis through the Design of Hybrid Plasmonic Nanostructures – S. Linic (University of Michigan)

- 10:40 **928** *(Invited)* Quantum Confinement Controls Effective Band Gap, Photocatalytic H₂ Evolution and Photovoltage in CdSe Nanocrystals – F. E. Osterloh, J. Zhao (Department of Chemistry, University of California, Davis), M. A. Holmes (University of California, Davis), and B. A. Nail (Department of Chemistry, University of California, Davis)
- 11:00 **929** *(Invited)* Precision Synthesis of Subnanoparticles Using a Dendrimer Reactor – K. Yamamoto (Tokyo Institute of Technology)
- 11:20 **930** *(Invited)* Probing Charge Density and Surface Chemistry of Nanostructured Electrodes Using Single-Particle Spectro-Electrochemistry – S. Link (Rice University)
- 11:40 **931** *(Invited)* Reaction Site Analysis for Plasmon-Induced Charge Separation – T. Tatsuma, H. Nishi, K. Saito, T. Ishida, and K. C. Kao (Institute of Industrial Science, University of Tokyo)
- 16:20 **938** *(Invited)* Circularly Polarized Luminescence from Planar Chiral Molecules Based on [2.2] Paracyclophane – Y. Morisaki (Kwansei Gakuin University)
- 16:40 **939** *(Invited)* Strongly Antiaromatic Porphyrins with Singlet Biradical Character – H. Shinokubo (Graduate School of Engineering, Nagoya University)
- 17:00 **940** *(Invited)* Structural and Photophysical Properties of Pentacene-Based Self-Assembled Monolayers on Gold Nanomaterials – T. Hasobe and H. Sakai (Faculty of Science and Technology, Keio University)
- 17:20 **941** *(Invited)* Synthesis and Redox Property of Sumanenyl Trication – H. Sakurai, Y. Ohigashi, N. Ikuma, and Y. Yakiyama (Osaka University)
- 17:40 **942** *(Invited)* Luminescent Mechanochromic Gold Complex Exhibiting Phase Transition Between Crystalline Phases – T. Seki (Hokkaido University)

Nanostructure 3 – 14:00 – 16:00

Co-Chairs: Tianquan Lian and Kei Murakoshi

- 14:00 **932** *(Invited)* Carbon Nanotube and Porphyrins: Materials for Optics and Energy Applications – M. Hanana (CEA-Saclay), G. Delport (Laboratoire Aimé Cotton, ENS Cachan), S. Le Gac (UMR CNRS 6226, ISCR, Université de Rennes 1), C. Voisin (Ecole Normale Supérieure), B. Jousselle (CEA-Saclay), B. Boitrel (UMR CNRS 6226, ISCR, Université de Rennes 1), J. S. Lauret (Laboratoire Aimé Cotton, ENS Paris Saclay), and S. Campidelli (CEA-Saclay)
- 14:20 **933** Electrochemical Control of Plasmonic Metal Nanogap for Ultra-Small Light Confinement – S. Oikawa, H. Minamimoto, and K. Murakoshi (Hokkaido University)
- 14:40 **934** *(Invited)* Assembling Different Functional Molecules into Multifunctional, Crystalline, Molecular Solids – C. Wöll (Karlsruhe Institute of Technology)
- 15:00 **935** *(Invited)* Multielectron Oxygen Reduction in Photocatalytic Organics Decomposition By Nano/Micrometer-Sized Hierarchical Structured Bismuth Tungstate Particles – B. Ohtani (Institute for Catalysis, Hokkaido University, Graduate School of Environmental Science, Hokkaido Univ), H. Hori (Graduate School of Environmental Science, Hokkaido Univ.), M. Takase (Graduate School of Engineering, Muroran Institute of Tech), and M. Takashima (Graduate School of Environmental Science, Institute for Catalysis, Hokkaido University)
- 15:20 **936** *(Invited)* Light-Driven H₂ Generation Using 1D and 2D Multicomponent Semiconductor/Catalyst Nanoheterostructures – T. Lian (Emory University)
- 15:40 Break

pi-System Figuration 1 – 16:00 – 18:00

Co-Chairs: Takanori Fukushima and Hidehiro Sakurai

- 16:00 **937** Solid-Surface Modification with Two-Dimensionally Ordered Oriented Molecular Films – T. Fukushima (Tokyo Institute of Technology)

G01 Corrosion General Session

Corrosion

Room 304, Washington State Convention Center

Corrosion Protection – 09:00 – 11:50

Co-Chairs: Sannakaisa Virtanen and Masayuki Itagaki

- 09:00 **1087** Enhanced Corrosion Protection of Copper in Salt Environments with Nanolaminate Ceramic Coatings Deposited By Atomic Layer Deposition – M. A. Fusco, C. J. Oldham, and G. N. Parsons (North Carolina State University)
- 09:20 **1088** Investigation of Protective Coatings for Bronze Using Combined Techniques – A. K. Surca, M. Mihelčič, E. Šest, I. Jerman (National Institute of Chemistry), M. Gaberscek (National Institute of Chemistry Slovenia), G. Di Carlo, C. Giuliani (Istituto per lo Studio dei Materiali Nanostrutturati), M. Salzano de Luna, and M. Lavorgna (Istituto per i Polimeri, Compositi e Biomateriali)
- 09:40 Break
- 10:10 **1089** Electrochemical Investigation of the Role of Alkaline Pretreatment in Anticorrosion Performance of Silicone-Epoxy Coatings on 2024 Al-Alloy – X. Yuan Sr. (Northwestern Polytechnical University)
- 10:30 **1090** Anticorrosive Coating Based on Glycerol and Polyurethane Organic-Inorganic Hybrids – Á. G. Braz, S. H. Pulcinelli, and C. V. Santilli (IQ-UNESP/Araraquara)
- 10:50 **1091** Hybrid Silicone-Epoxy Coating Reinforced with Silanized Graphene Oxide Nanosheets with Improved Anti-Corrosion Performance – X. Chen, Z. Yue, X. Yuan, S. Wen, Z. Liu, and T. Feng (Northwestern Polytechnical University)
- 11:10 **1092** Innovative Routes for the Fabrication of Advanced Multifunctional Protective Coatings with Combined Improved Barrier, Smart Active Feedback, Self-Repairing, and Antimicrobial Properties for Materials Protection – D. I. Njoku (Institute of metal research), M. Cui, B. Shang, and Y. Li (Institute of Metal Research (IMR-CAS))
- 11:30 **1093** A Novel Inhibitor for L921A alloy Steel in a 3.5 % NaCl Solution – X. Yong, Z. Chen, L. Zhou, L. Jiang, and R. Chen (Beijing University of Chemical Technology)

Corrosion Mechanisms and Electrochemical Methods – 14:00 – 17:50**Co-Chair: Eiji Tada**

- 14:00 **1094** Investigation of Pit Initiations on Copper during Anodic Polarization By Real-Time Surface Observation System with Channel Flow Double Electrode – Y. Hoshi, T. Oda, I. Shitanda, and M. Itagaki (Tokyo University of Science)
- 14:20 **1095** Techniques for in-Situ Liquid Cell TEM of Aluminum Localized Corrosion – D. Duquette, A. Pinkowitz, and R. Hull (Rensselaer Polytechnic Institute)
- 14:40 **1096** Terahertz Spectrum Measurement of Corrosion Products on Coated Steel Sheet Surface – R. Hasegawa, T. Kimura, T. Tanabe (Tohoku Univ.), K. Nishihara, A. Taniyama (Nippon Steel & Sumitomo Metal Co., Ltd.), and Y. Oyama (Tohoku Univ.)
- 15:00 **1097** Improving the Relative Calculations of Volta Potential Differences Acquired from Scanning Kelvin Probe Force Microscopy (SKPFM) By Comparing Inert Standards to First-Principle Calculations – C. Efav, T. da Silva, P. Davis, L. Li, and M. Hurley (Boise State University)
- 15:20 **1098** A New and Cheap Methodology to Study Tridimensionally Pitting Corrosion in Stainless Steel – D. Coelho (Dept. Chemistry, Federal University of Sao Carlos), O. Cuadros Linares (Inst. Math. Comp. Sci., Univ of Sao Paulo, S Carlos, Brazil.), A. Oliveira (Chem. Dept. - Federal Univ. Sao Carlos, Sao Carlos, Brazil), M. Andrade Jr. (Chem Dept - Federal University Sao Carlos, S Carlos, Brazil), E. Rios (Chem. Dept, Federal Univ. Sao Carlos, S. Carlos, Brazil), A. M. Zimer (Chem. Dept, Federal Univ. of Sao Carlos, S. Carlos, Brazil), L. H. Mascaro (Federal University of São Carlos), J. D. E. S. Batista Neto (Int. Math Comp Sci., S Paulo Univ. S Carlos, Brazil), O. M. Bruno (Phys Inst S Carlos, S Paulo Univ, Sao Carlos, Brazil), and E. C. Pereira (Federal University of Sao Carlos)
- 15:40 Break
- 16:00 **1099** Reactive Molecular Dynamics Modeling of Chloride-Induced Depassivation of Iron Passive Film in Alkaline Media – H. DorMohammad, Q. Pang, L. Árnadóttir, and O. B. Isgor (Oregon State University)
- 16:20 **1100** Density Functional Theory Study of the Interactions of Cl and α -Fe₂O₃ Surfaces: The Role of Cl in the Depassivation Process – Q. Pang (Oregon State University), H. DorMohammad (Oregons State University), O. B. Isgor, and L. Árnadóttir (Oregon State University)
- 16:40 **1101** Anodic Oxidation of Bismuth Towards Various Nanostructures – H. Sopha and J. M. Macak (University of Pardubice)
- 17:00 **1102** Impedance Analysis of Ti-Based Porous Alloy – M. Sancy, C. Guerra, D. Silva, M. Walczak (Pontificia Universidad Católica de Chile), and C. Aguilar (Universidad Técnica Federico Santa Maria)
- 17:20 **1103** Microstructure and Corrosion Behavior of Fe-Cr-Ni-Co-Mn High Entropy Alloys – J. K. Chang (National Taiwan University), K. M. Hsu (National Taiwan University, Department of Materials Science and Engineering), and C. S. Lin (National Taiwan University)
- 17:40 Concluding Remarks

C02**High Temperature Corrosion and Materials Chemistry 13**

High Temperature Materials / Corrosion

Room 305, Washington State Convention Center

Materials Chemistry – 08:00 – 11:40**Co-Chairs: Jan Froitzheim and Paul Gannon**

- 08:00 Welcoming Remarks
- 08:10 **1136** (Invited) High-Temperature Behaviors of MXenes – M. Seredych (A.J. Drexel Nanomaterials Institute, Drexel University), M. Alhabej (A. J. Drexel Nanomaterials Institute), B. Anasori (A.J. Drexel Nanomaterials Institute), and Y. Gogotsi (Drexel University)
- 08:50 **1137** Novel Approach to the Formation of Carbide-Derived Carbons Using NH₄Cl – E. Remington, S. Dansereau, D. McGlamery, G. Tatar, N. Stadie, and P. Gannon (Montana State University - Bozeman)
- 09:10 **1138** Development of an Advanced Knudsen Effusion Mass Spectrometer for Measurements of Vapor Pressures and Determination of Basic Thermodynamic Data – T. Markus and D. Henriques (Mannheim University of Applied Science)
- 09:30 Break
- 10:00 **1139** Electrolytic Reduction of Cerium Oxide – D. Rodriguez, M. Monreal, M. Jackson, and K. Weisbrod (Los Alamos National Laboratory)
- 10:20 **1140** Masking Contaminant-Induced SOFC Anode Degradation with H₂ – K. W. Reeping (University of Calgary), J. M. Bohn, and R. A. Walker (Montana State University)
- 10:40 **1141** The Mechanisms of Spinel/Solid Solution Formation and Wear in Gasification High Chrome Oxide Refractories Caused By Carbon Feedstock Impurities – J. P. Bennett, K. S. Kwong (National Energy Technology Laboratory - USDOE), J. Nakano, A. Nakano (National Energy Technology Laboratory - AECOM), and W. Nealley (ORISE - National Energy Technology Laboratory)
- 11:00 **1142** Real-Time Analysis on Structural Variations of Alumina-Supported Cu/Fe Spinel and Natural Hematite Particles in Cyclic Redox Environments – J. Nakano (National Energy Technology Laboratory - AECOM), W. Nealley (ORISE - National Energy Technology Laboratory), A. Nakano (National Energy Technology Laboratory - AECOM), and J. P. Bennett (National Energy Technology Laboratory - USDOE)
- 11:20 Concluding Remarks

D01**Nanoscale Luminescent Materials 5**

Dielectric Science and Technology / Luminescence and Display Materials

Room 308, Washington State Convention Center

Optoelectronics 1 – 08:00 – 10:00**Co-Chairs: Jean-Pierre Landesman and Chennupati Jagadish**

- 08:00 **1164** (Invited) Light Management for Engineering Luminescence in Nanoscale Environments By Numerical Optimization – P. I. Schneider, X. Garcia-Santiago (JCMwave), F. Binkowski, P. Gutsche, T. Hoehne (Zuse Institute Berlin), M. Hammerschmidt, L. Zschiedrich (JCMwave), and S. Burger (Zuse Institute Berlin, JCMwave)

E01 Electrodeposition of Micro and Nano Materials for Batteries and Sensors
 Electrodeposition / Battery / Sensor
 Room 306, Washington State Convention Center

Nanostructured Electrodes – 08:00 – 11:40

Co-Chairs: James F. Rohan, Leif Nyholm, and Abhishek Lahiri

- 08:00 **1205** *(Invited)* Electrochemical Manufacturing and Characterisation of Nanostructured Electrodes for Lithium Based Batteries – D. Rehnlund, C. Ihrfors, and L. Nyholm (Department of Chemistry - Ångström, Uppsala University)
- 08:40 **1206** Encapsulation of Aluminium and Titanium-Aluminium Nanorods into Oxide Matrix By Powerful Pulsed Discharge Method – M. G. S. Ferreira (University of Aveiro), M. Zheludkevich (Helmholtz-Zentrum Geesthacht (HZG)), and A. Lisenkov (University of Aveiro)
- 09:00 **1207** Influence of Growth Mechanism and Potential Cycling on the Active Surface Area of Electrodeposited Highly Porous Pt Nanoparticles – A. Hubin, J. Ustarroz (Vrije Universiteit Brussel, SURF Group), B. Geboes (University of Antwerp, ART Group), S. Bals (University of Antwerp, EMAT Group), and T. Breugelmanns (University of Antwerp, Research group ART)
- 09:20 **1208** Electrodeposition to Form Nanoporous Gold at Microdisc Electrode Arrays for Electrochemical Sensing Applications – J. F. Rohan (Tyndall National Institute, UCC, Ireland), L. C. Nagle, and F. Barry (Tyndall National Institute, University College Cork)
- 09:40 Break
- 10:00 **1209** *(Invited)* Electrochemical Synthesis of Nanostructured Materials Using Ionic Liquids for Metal-Ion Batteries – A. Lahiri and F. Endres (Clausthal University of Technology)
- 10:40 **1210** Interconnected Nickel Nanowires – the Missing Link between Metallic High Surface Area Catalysts and High Porosity Foams – S. P. Zankowski (KU Leuven, Center of Surface Chemistry and Catalysis, imec) and P. M. Vereecken (Centre for Surface Chemistry and Catalysis, KU Leuven, imec)
- 11:00 **1211** Controlled Superlattice Assembly – a Step Towards Superlattice Devices – Y. Yu (Lawrence Livermore National Laboratory), D. Yu (Department of Materials Science and Engineering, UCLA), and C. A. Orme (Lawrence Livermore National Laboratory)
- 11:20 **1212** Electrochemical Liquid Liquid Solid Growth of Group IV Nanowires and Microwires for Recharge Battery Anode Applications – S. Maldonado (University of Michigan)

Microbatteries 1 – 11:40 – 12:00

Co-Chair: Sami Oukassi

- 11:40 **1213** Electrodeposition of Adherent MnO₂ Films with Optimized Current Collector Interface for 3D Li-Ion Electrodes – P. M. Vereecken (IMEC), M. Y. Timmermans (IMEC, Leuven), F. Mattelaer (Department of Solid State Sciences, Ghent University), N. Labyedh (imec, Kapeldreef 75, B-3001 Heverlee, Belgium), S. P. Zankowski (imec), and C. Detavernier (Department of Solid State Sciences, Ghent University)

- 08:40 **1165** *(Invited)* High-Index Dielectric Nanoantennas for Light Management, Nonlinear Optics, and Controlled Photoluminescence of Quantum Emitters – P. R. Wiecha, A. Cuche, C. Girard, A. Arbouet, and V. Paillard (CEMES-CNRS, Université de Toulouse)
- 09:20 **1168** A Method to Improve Quantum Efficiency of Phosphors in the Submicron Size Regime Using a Flux for Solid State Lighting Applications – J. Ha, E. Novitskaya (University of California San Diego), G. Hirata (Center for Nanoscience and Nanotechnology), C. Zhou, R. Ridley, O. A. Graeve (University of California San Diego), Z. Wang, S. P. Ong (University of California, San Diego), and J. McKittrick (University of California San Diego)
- 09:40 Break

Optoelectronics 2 – 10:00 – 12:20

Co-Chairs: Christine Luscombe and Reuven Gordon

- 10:00 **1167** *(Invited)* Light Emitting Nanomaterials with Light Detection, Biosensing and Memristive Properties – B. Garrido (Universitat de Barcelona)
- 10:40 **1166** Enhancement of SSE-LED Light Emission By Embedding CdS in Zr-Doped HfO₂ High-K Film – S. Zhang and Y. Kuo (Texas A&M University)
- 11:00 **1169** *(Invited)* Semiconductor Nanowires for Optoelectronics Applications – C. Jagadish (Australian National University), L. M. Smith, and H. E. Jackson (University of Cincinnati)
- 11:40 **1170** *(Invited)* AlGaN Nanowire Deep Ultraviolet Photonics – Z. Mi (University of Michigan)

Ge-based Systems – 14:00 – 17:10

Co-Chairs: Rosalia Serna and Blas Garrido

- 14:00 **1171** *(Invited)* Emission from Strained Germanium Nanocrystals – N. L. Rowell (National Research Council Canada) and D. J. Lockwood (National Research Council)
- 14:40 **1172** *(Invited)* Strain Assisted Band Gap Engineering of SiGe Core-Shell Nanowires using Low-Temperature Condensation Process – I. Berbezier, T. David, A. Ronda, L. Favre, M. Gailhanou (IM2NP), P. Gentile (INAC-PHELIQS (UGA, CEA)), D. Buttard (Université Grenoble Alpes, CEA INAC-Pheliquis- SiNaPS), V. Calvo (CEA, INAC, Grenoble, France), M. Amato (Université Paris-SUD), and J. N. Aqua (INSP)
- 15:20 Break
- 15:45 **1173** *(Invited)* Silicon Photonics Based on Ge/SiGe Quantum Well (QW) Structures and Ge-Rich Materials for Near-IR and Mid-IR – J. M. Ramirez, V. Vakarin (Université Paris-Sud), P. Chaisakul (Institut d'Electronique Fondamentale), S. Serna, Q. Liu (Université Paris-Sud), J. Frigerio, A. Ballabio (Politecnico di Milano), X. Le Roux, L. Vivien (University of Paris-Sud), G. Isella (Politecnico di Milano), E. Cassan (University of Paris-Sud), N. Dubreuil (Institute d'Optique), and D. Marris-Morini (University of Paris-Sud)
- 16:25 **1174** *(Invited)* CMOS-Compatible Germanium Light Sources – K. Sawano, X. Xu, and T. Maruizumi (Tokyo City University)
- 17:05 Concluding Remarks

Microbatteries 2 – 14:00 – 16:00**Co-Chairs: Philippe M. Vereecken and Sami Oukassi**

- 14:00 1214 *(Invited)* Thin Film Processing for Innovative Solid State Lithium Batteries – S. Oukassi, H. Porthault, S. Martin, M. Bedjaoui, and R. Salot (Univ. Grenoble Alpes, CEA LETI, DCOS, LMBE, 38000 Grenoble)
- 14:40 1215 ALD Al₂O₃ Coating of Self-Organized TiO₂ Nanotubes As High Performance Anodes for Lithium Ion Batteries – T. Djenizian (Ecole Nationale Supérieure des Mines de Saint-Etienne), J. M. Macak, H. Sopha (University of Pardubice), and G. Salián (AIX-MARSEILLE UNIVERSITY)
- 15:00 1216 *(Invited)* Atomic Layer Deposition for Interface Engineering of (Thin-Film) Lithium-Ion Battery – F. Mattelaer (Department of Solid State Sciences, Ghent University), M. Y. Timmermans (IMEC, Leuven), P. M. Vereecken (Centre for Surface Chemistry and Catalysis, KU Leuven, IMEC), J. Dendooven, and C. Detavernier (Department of Solid State Sciences, Ghent University)
- 15:30 Break

Sensors – 16:00 – 17:50**Co-Chairs: James F. Rohan and Nosang Vincent Myung**

- 16:00 1217 *(Invited)* Electrochemically Synthesized High Density Chemical Sensor Arrays – N. V. Myung (University of California - Riverside)
- 16:40 1218 Novel Electrochemical Sensor Concept for the Detection of Lead Contamination in Drinking Water – X. Liu, K. Venkatraman, and R. Akolkar (Case Western Reserve University)
- 17:00 1219 Completely Aqueous Route for Metallization of Structural Polymeric Materials in Micro-Electro-Mechanical Systems – X. T. Le, J. S. Poirier, and S. Michel (C2MI-Teledyne Dalsa)
- 17:20 1220 *(Invited)* Synthesis and Electromagnetic Properties of Square-Symmetry π -Conjugated Phthalocyanato Metal-Organic Frameworks – I. Stassen and M. Dincă (Massachusetts Institute of Technology)

E02**Surfactant and Additive Effects on Thin Film Deposition, Dissolution, and Particle Growth**

Electrodeposition

Room 211, Washington State Convention Center

Surfactant Mediated Nucleation and Growth 5 – 08:00 – 12:00**Co-Chairs: Peter Broekmann, Rohan Akolkar, and Thomas P. Moffat**

- 08:00 1251 *(Invited)* Additives in Cu Plating for Microelectronics Applications – A. Radisic (imec), F. M. Ross (IBM T.J. Watson Research Center), K. P. Haesevoets (imec, Centre for Surface Chemistry and Catalysis, KU Leuven), H. Struyf (imec), and P. M. Vereecken (imec, Belgium, Centre for Surface Chemistry and Catalysis, KU Leuven)
- 08:40 1252 *(Invited)* Chain Length Variation to Probe Mechanism of Accelerator Additives in Copper Electrodeposition – A. A. Gewirth (University of Illinois), R. Schmidt (Atotech Deutschland GmbH), K. G. Schmitt, and R. Rooney (University of Illinois at Urbana-Champaign)

- 09:00 1253 Superconformal Cu Electrodeposition: Seiras and STM Study of the Polyether-SPS-Cl System – G. Liu (NIST), S. Zou (American University), L. Y. Ou Yang, D. Josell, L. Richter, and T. P. Moffat (NIST)
- 09:20 1254 Copper Electroplating with Polyethylene Glycol and Chloride: Modeling, Experimental Analysis and Parameter Determination – H. Yang (TU Dresden), R. Krause, C. Scheunert, R. Liske, B. Uhlig (Fraunhofer Institute for Photonic Microsystems), A. Preusse (Globalfoundries Dresden Module One LLC & Co.KG), A. Dianat, M. Bobeth, and G. Cuniberti (TU Dresden)
- 09:40 Break
- 10:00 1255 Observation of Additive Behavior in Copper Electroplating Using Microfluidic Device – M. Tomie, T. Akita, R. Ikuta, and M. Hayase (Tokyo University of Science)
- 10:20 1256 Exploiting the Spatial Homogeneity of Adlayer Breakdown on Microelectrodes to Develop a Kinetic Model for S-NDR Copper Electrodeposition – T. M. Braun and T. P. Moffat (NIST)
- 10:40 1257 Surface Morphology of Copper Pulse Deposition in a Controlled Environment Using Microfluidic Device – R. Kawazoe, A. Yamauchi, and M. Hayase (Tokyo University of Science)
- 11:00 1258 Electrodeposition of Nickel Nanostructures from Deep Eutectic Solvent / Water Mixtures – E. A. Mernissi Cherigui (Vrije Universiteit Brussel), K. Sentosun (University of Antwerp), S. Bals (University of Antwerp, EMAT Group), H. Terryn (Vrije Universiteit Brussel), and J. Ustarroz (Vrije Universiteit Brussel, SURF Group)
- 11:20 1259 Spatial Chemical Analysis of Electrodeposited Metal Films By Femtosecond Laser Ablation Ionization Mass Spectrometry – P. Moreno-García, V. Grimaudo, A. Riedo, A. Cedeño López, R. Wiesendanger, M. Tulej (University of Bern), C. Gruber, E. Lörtscher (IBM Research - Zurich, Science and Technology Department), P. Wurz, and P. Broekmann (University of Bern)

Surfactant Mediated Nucleation and Growth 6 – 14:00 – 17:40**Co-Chairs: Rohan Akolkar, Thomas P. Moffat, and Peter Broekmann**

- 14:00 1260 Electrolyte and Electrode Design for Dynamic Windows Based on Reversible Metal Electrodeposition – M. Strand, T. Hernandez, D. Slotcavage (Stanford University), C. J. Barile (University of Nevada, Reno), and M. D. McGehee (Stanford University)

- 14:20 **1261** The Effect of Pulsed Current and Organic Additives on the Hydrogen Incorporation in Electroformed Copper Used in High Vacuum Applications – L. Lain Amador (CERN, European Organization for Nuclear Research), J. Rolet (IRT M2P, 4, rue Augustin Fresnel F-57070 Metz), M. L. Doche (UTINAM UMR 6213 CNRS University Bourgogne Franche-Comté), P. Massuti Ballester (CERN, European Organization for Nuclear Research), M. P. Gigandet, V. Moutarlier (UTINAM UMR 6213 CNRS Univ BOURGOGNE FRANCHE COMTE), M. Taborelli, L. M. A. Ferreira, P. Chiggiato (CERN, European Organization for Nuclear Research), and J. Y. Hihn (UTINAM UMR 6213 CNRS Univ BOURGOGNE FRANCHE COMTE)
- 14:40 **1262** (Invited) Adsorbate and Impurity Effects during Co Deposition and Planarization for MOL Contact and Beol Metallization – J. Kelly (IBM Research), V. Kamineni (GLOBALFOUNDRIES), X. Lin (GLOBALFOUNDRIES), Y. Liang (GLOBALFOUNDRIES), H. Amanapu (IBM), B. Peethala (IBM Albany), M. Raymond (GLOBALFOUNDRIES), and B. Haran (IBM Research)
- 15:20 **1263** Influence of Pulse Current Sequences and Organic Additives on pH Measured By Local Methods – J. Rolet (IRT M2P, 4, rue Augustin Fresnel F-57070 Metz), B. Vuillemin (ICB UMR CNRS 6303 Univ. Bourgogne Franche Comte), M. P. Gigandet (UTINAM UMR 6213 CNRS Univ BOURGOGNE FRANCHE COMTE), C. Gleyzes (UT2A), and J. Y. Hihn (UTINAM UMR 6213 CNRS Univ BOURGOGNE FRANCHE COMTE)
- 15:40 Break
- 16:00 **1264** CuNi Alloy Electrodeposition for Microbumps Using Benzotriazole – K. P. Haesevoets (Centre for Surface Chemistry and Catalysis, KU Leuven, imec), A. Radisic (imec), and P. M. Vereecken (IMEC, Centre for Surface Chemistry and Catalysis, KU Leuven)
- 16:20 **1265** Influence of Applied Potential, Water Content and Forced Convection on the Electrodeposition of Ni Films on Steel from Choline Chloride Based Deep Eutectic Solvents – M. Łukaczyńska (Vrije Universiteit Brussel), K. Van den Bergh, J. De Strycker (OCAS), H. Terryn (Vrije Universiteit Brussel), and J. Ustarroz (Vrije Universiteit Brussel, SURF Group)
- 16:40 **1266** Effects of Microstructure of Nickel Electrodeposits on the Growth of Tin-Nickel Intermetallic Compound and Joint Reliability – M. Park (ThinFilm Technology Team, Samsung Electronics Co. Ltd., Korea Advanced Institute of Science and Technology), T. Ryu, S. Lee, K. Kim (ThinFilm Technology Team, Samsung Electronics Co. Ltd.), and H. Kwon (Korea Advanced Institute of Science and Technology)
- 17:00 **1267** Tailoring the Surface Morphology and Microstructure of Electrodeposited Copper Foil with Organic Additives – C. C. Lin (National Tsing Hua University) and C. C. Hu (National Tsing Hua University)
- 17:20 **1268** Multivalent Metal Ions As Efficient Reducing Agents for Electroless Metal Deposition Processes – E. Norkus and L. Tamasauskaitė-Tamasiunaite (Center for Physical Sciences and Technology)

F01

Industrial Electrochemistry and Electrochemical Engineering General Session

Industrial Electrochemistry and Electrochemical Engineering
Room 618, Washington State Convention Center

General Session 5 – 08:00 – 13:00

Co-Chair: Douglas P. Riemer

- 08:00 **1310** From the Lab to Scaling-up: Case Studies of Electrodeposition Processes in the Photovoltaic Industry – P. P. Grand (EDF), S. Jaime (CIATEC), C. Broussillou (PHOTOWATT), A. Duchatelet, C. Molto (EDF), A. M. Gonçalves (Institut Lavoisier de Versailles UMR8180 CNRS-UVSQ), E. Drahi (TOTAL GRP), L. Romankiw, H. Deligianni (IBM), and D. Lincot (CNRS)
- 08:40 **1311** Electrochemical Behaviour of Iron in Molten Oxides – W. D. Judge and G. Azimi (University of Toronto)
- 09:00 **1312** In Situ TEM Observation of Dynamic Switching Behaviors in Vrram – M. C. Wu, J. Y. Chen, and W. W. Wu (Dep. of Materials Science and Engineering, NCTU)
- 09:20 **1313** Electrochemical Formation of Dy Alloys in a Molten CaCl₂-LiCl System – H. Konishi, H. Hua, H. Ono (Graduate School of Engineering, Osaka University), T. Oishi (AIST (Japan)), K. Yasuda (Environment, Safety & Health Org., Kyoto University), and T. Nohira (Institute of Advanced Energy, Kyoto University)
- 09:40 **1314** Observing Electrochemical Switching Behaviors in Crossbar Core-Shell Ni/NiO Nanowires Memristor – Y. H. Ting, J. Y. Chen, C. W. Huang, T. K. Huang (Dep. of Materials Science and Engineering, NCTU), C. Y. Hsieh (Material and Chemical Research Laboratories, ITRI), and W. W. Wu (Dep. of Materials Science and Engineering, NCTU)
- 10:00 Break
- 10:20 **1315** An Electrochemical Quartz Crystal Microbalance Investigation of Manganese Oxide Deposition and Dissolution in Sulfuric Acid Relevant for Zinc Electrowinning – S. M. Skaftun, S. Sunde, G. M. Haarberg, and F. Seland (Norwegian University of Science and Technology)
- 10:40 **1316** Reversible Electrochemical Mirror Devices Using Room Temperature Ionic Liquid Electrolyte – H. Garich, T. D. Hall, M. Inman, E. J. Taylor (Faraday Technology, Inc.), T. Peng (Kirtland Air Force Base), J. Davis, R. O'Brien (University of South Alabama), and D. M. Tench (Tench Technology)
- 11:00 **1317** Reduction of Tortuosity in Porous Electrodes through Macropore Patterning – E. R. Reale and K. C. Smith (University of Illinois at Urbana-Champaign)
- 11:20 **1318** Tunability of the Photogenerated Charge Carrier Density on Semiconductors By in-Situ Electrochemical Treatments – X. Liu, J. D. Real (University of British Columbia), and W. Mérida (Clean Energy Research Centre, UBC)

- 11:40 **1319** Mechanism of Initial Film Formation during Cathodic Electrodeposition of Coatings – F. Padash and J. N. Harb (Dept. of Chemical Engineering, Brigham Young University)
- 12:00 **1320** Microfabrication and Functionalization of an Aluminum Gas-Phase Micro-Reactor via Through-Mask Electrochemical Micromachining – T. Baldhoff, V. Nock, and A. T. Marshall (University of Canterbury)
- 12:20 **1321** Electrochemical Surface Finishing of Additively Manufactured Parts – T. D. Hall, H. Garich, S. Snyder, and E. J. Taylor (Faraday Technology, Inc.)
- 12:40 **1322** Multiphysics Modeling of Surface Finishing Performance in Pulsed-Waveform Electrochemical Machining – B. Skinn, T. D. Hall, S. Snyder, and E. J. Taylor (Faraday Technology, Inc.)

F02

Multiscale Modeling, Simulation and Design – From Conventional Methods to the Latest in Data Science
Industrial Electrochemistry and Electrochemical Engineering / Energy Technology
Room 619, Washington State Convention Center

Multiscale Modeling- Batteries 1 – 08:00 – 12:20

Co-Chairs: John N. Harb and Michael A. Lowe

- 08:00 **1341** *(Invited)* Studies of Li Insertion in Magnetite at Multiple Length Scales – A. C. West, C. N. Lininger, and N. W. Brady (Columbia University)
- 08:40 **1342** *(Invited)* Multiscale Analysis of the Polysulfide Shuttle Effects at the Li Metal Anode and Cathode Morphology Evolution in Li-S Batteries – P. B. Balbuena (Department of Chemical Engineering, Texas A&M University), P. P. Mukherjee, and V. G. Pol (Purdue University)
- 09:20 **1343** Optimal Graded Electrode Design of Lithium-Ion Batteries with Simultaneous Optimization Approach – Y. Qi, T. Jang (University of Washington), V. Ramadesigan (Indian Institute of Technology, Bombay), D. T. Schwartz (University of Washington), and V. R. Subramanian (University of Washington, Seattle)
- 09:40 Break
- 10:00 **1344** *(Invited)* How to Deal with Electrode Heterogeneity in Cell-Level Battery Modeling – D. R. Wheeler (Brigham Young University)
- 10:40 **1345** *(Invited)* Modeling Battery Performance Due to Volume Change in Porous Electrodes – T. R. Garrick (General Motors) and J. W. Weidner (University of South Carolina)
- 11:20 **1346** Microstructural Principles for Porous Li-Ion Battery Electrode Designs – A. Deva and R. E. Garcia (School of Materials Engineering, Purdue University)
- 11:40 **1347** Modeling of Lithium Sulfur Battery with Microscopically Consistent Parameterization – J. H. Chung (Department of Physics, National Taiwan University) and H. Y. Chen (National Taiwan University)
- 12:00 **1348** Modeling Lithium Growth in Symmetric Cells – J. Chen, A. Subramaniam, S. B. Lee (University of Washington, Seattle), N. R. Geise, R. M. Kasse (Stanford University), M. F. Toney (SLAC National Accelerator Laboratory), and V. R. Subramanian (University of Washington, Seattle, Pacific Northwest National Laboratory)

Multiscale Modeling- Batteries 2 – 14:00 – 17:40

Co-Chairs: Jean St-Pierre and Venkat R. Subramanian

- 14:00 **1349** *(Invited)* Analytical Methods for Understanding Multiscale Thermal Transport in Li-Ion Batteries Towards Improved Safety and Performance – A. Jain (The University of Texas at Arlington)
- 14:40 **1350** Review of Capacity Fade Models for Lithium-Ion Batteries - Numerical Implications of SEI Layer Growth – M. Fan (University of Washington), S. B. Lee (University of Washington, Seattle), M. Pathak, Y. Qi (University of Washington), J. Chen, and V. R. Subramanian (University of Washington, Seattle)
- 15:00 **1351** On the Limitations of the Doyle-Fuller-Newman Model across Operating Temperatures in Predicting Lithium-Ion Battery Dynamics – H. Arunachalam (Clemson University), I. Battiato, and S. Onori (Stanford University)
- 15:20 **1352** Phase Field Modeling of Electrochemical Phenomena – N. A. Zerihun (NIKE)
- 15:40 Break
- 16:00 **1353** A Pulse Voltammetry Analysis Toolkit for Battery and Fuel Cell Materials – P. W. C. Northrop and J. V. Cole (CFD Research Corporation)
- 16:20 **1354** Real-Time Impedance Simulation of Lithium-Ion Batteries with Pseudo-Two Dimensional Electrochemical Models – M. Pathak (University of Washington, Seattle), M. D. Murbach (University of Washington), C. Pathak, T. Jang (University of Washington, Seattle), Y. Qi, D. T. Schwartz (University of Washington), and V. R. Subramanian (Pacific Northwest National Laboratory, University of Washington, Seattle)
- 16:40 **1355** Measurement of Non-Linear Impedances and Zero Free Parameter Modeling Approach for Predicting Battery Voltages – C. B. Uzundal, M. Zabara, and B. Ulgut (Bilkent University)
- 17:00 **1356** Estimation of Transport and Kinetic Parameters of Vanadium Redox Batteries Using Static Cells and Electrochemical Models – S. B. Lee (University of Washington, Seattle), H. D. Pratt III, T. M. Anderson (Sandia National Laboratories), K. Mitra (Indian Institute of Technology, Hyderabad), B. R. Chalamala (Sandia National Laboratories), and V. R. Subramanian (University of Washington, Seattle, Pacific Northwest National Laboratory)
- 17:20 **1357** Estimation of Transport and Kinetic Parameters of a Solid-State Lithium Battery – C. D. Parke, S. Kolluri (University of Washington), and V. R. Subramanian (University of Washington, Seattle, Pacific Northwest National Laboratory)

Wednesday, May 16

Silicon Carbide – 09:00 – 10:50**Co-Chair: Steve H. Kilgore**

- 09:00 1438 *(Invited)* SiC Lateral Mosfet Implemented on Semi-Insulating Substrate – H. W. Kim, O. Seok, J. H. Moon, and W. Bahng (Korea Electrotechnology Research Institute)
- 09:30 1439 Electrical and Material Properties Analysis of 5kV 4H-SiC Schottky Barrier Diodes – J. Keum (Korea Electrotechnology Research Institute, Changwon National University), M. Na, I. H. Kang, W. Bahng (Korea Electrotechnology Research Institute), and B. Koo (Changwon National University)
- 09:50 1440 Reliability of SiC Schottky Diodes with Mo₂C Electrode – D. Saito, I. Muneta, T. Hoshii, H. Wakabayashi, K. Tsutsui, H. Iwai, and K. Kakushima (Tokyo Institute of Technology)
- 10:10 1441 Effect of Wafer Orientation on Near-Interface Oxide Traps in 4H-SiC Metal-Oxide-Semiconductor Capacitors – I. U. Jayawardhena, A. Jayawardhena, T. Isaacs-smith, and S. Dhar (Auburn University)
- 10:30 Break

Wide Bandgap Oxides 1 – 10:50 – 12:10**Co-Chair: Steve H. Kilgore**

- 10:50 1442 *(Invited)* Electrochemistry of Transition Metal Oxide Based Mountable Electrochromic Devices – B. Deb, G. P. Ganesh, and S. Surendran (CSIR-NIIST)
- 11:20 1443 *(Invited)* Surface Transfer Doping: A Novel Alternative to Classical Doping in Semiconductor Electronics – V. Chakrapani (Rensselaer Polytechnic Institute)
- 11:50 1444 Light Element Doping Induced Phase Change of Strongly Correlated Semiconductor SmNiO₃ – D. Schwanz, Z. Zhang, and S. Ramanathan (Purdue)

Wide Bandgap Oxides 2 – 13:50 – 17:30**Co-Chair: Vidhya Chakrapani**

- 13:50 1445 In Situ Studies of Zinc Oxide Nucleation and Growth – D. Yu (Department of Materials Science and Engineering, UCLA), Y. Yu (Lawrence Livermore National Laboratory), S. Kodambaka (University of California Los Angeles), and C. A. Orme (Lawrence Livermore National Laboratory)
- 14:10 1446 Rapid Synthesis of Semipolar ZnO Nanorod Arrays on M-Sapphire By Microwave-Assisted Chemical Bath Deposition – C. J. Tsai (Dept Mater Sci Eng, National Chiao Tung University), H. Do, C. Chang, K. A. Chiu, C. C. Hsiang, and L. Chang (Dept Mater Sci Eng, National Chiao Tung University)
- 14:30 1447 Mapping Strain/Pressure with ZnO Nanowire Arrays By Piezotronic and Piezo-Phototronic Effect – C. Pan and R. Bao (Beijing Institute of Nanoenergy and Nanosystems, CAS)

- 14:50 1448 Atomic Observation of Solid-State Reaction in Fe/ZnO Bilayer – C. Y. Huang (Dep. of Materials Science and Engineering, NCTU), K. L. Tai (Dep of Materials Science and Engineering, NCTU), M. Y. Lu (Dep of Materials Science and Engineering, NTHU), and W. W. Wu (National Chiao Tung University)
- 15:10 1449 Quantitative Analysis of Depletion Regime Charges in a Pristine a-Igzo TFT – M. D. H. Chowdhury (Cambridge University, PragmatIC Printing Limited), C. Ramsdale, R. Price, A. Jeziorska-Chapman (PragmatIC Printing Limited), and A. J. Flewitt (Cambridge University)
- 15:30 Break
- 15:50 1450 Impact of Hf and Al Co-Incorporation into the Atomic-Layer-Deposited ZnO Active Channel for the Thin-Film Transistor Applications – S. Y. Na and S. M. Yoon (Kyung Hee University)
- 16:10 1451 Light-Bias Duel Modulation on Spin-Coated Zinc-Tin Oxide (ZTO) Thin Film Transistor – J. S. Chen (National Cheng Kung University)
- 16:30 1452 Effect of Substrates on Structural Properties of Pure Anatase Phase Titanium Dioxide Thin Films Prepared By Mist Chemical Vapor Deposition – Q. Zhang (Kochi University of Technology) and C. LI (Center of Nanotechnology, Kochi University of Technology)
- 16:50 1453 Anomalous Electron Accumulation at Al₂O₃/in₂O₃ Interface Via Short-Range Ordered Two-Dimensional Electron Gas – S. Y. Lee and H. Seo (Ajou University)
- 17:10 1454 Designing Coupled Quantum Dot with ZnS-CdSe Hybrid Structure for Enhancing Exciton Lifetime – R. G. Pala (IIT Kanpur)

Emerging Sensing and Diagnostic Systems 1 – 08:00 – 12:20**Co-Chairs: Wenzhuo Wu and Yunseok Kim**

- 08:00 1516 *(Keynote)* Nanotechnology Approaches to Biological Heterogeneity – P. S. Weiss (UCLA)
- 08:40 1517 *(Invited)* Multifunctional Nano-Array Integrated Monolithic Devices: Toward Rational Engineered Nanomaterials Design and Scalable Nanomanufacturing – P. X. Gao (University of Connecticut)
- 09:10 1518 Plasmonic Nanopore Fabrication for Single Molecule Bio Sensor By Using Electron Beam Irradiation – S. S. Choi (SunMoon University and Sungkyunkwan University), M. J. Park (Korea Military Academy), C. H. Han, S. J. Oh (SunMoon University), Y. S. Kim (Sungkyunkwan University), and S. B. Choi (Inchon National University)
- 09:30 Break
- 10:00 1519 *(Invited)* Wireless Photoelectrochemical Control of Neuronal Activity with Coaxial Silicon Nanowires – B. Tian (the University of Chicago)

- 10:30 **1520** *(Invited)* Transparent Bioelectronics for Electrical and Optical Measurements of Embryonic Stem Cell Derived Cardiomyocytes – T. Cohen-Karni (Carnegie Mellon University, BME), S. Rastogi (Carnegie Mellon University), D. Shiwerski, J. Bliley (Carnegie Mellon University, BME), and A. Feinberg (Carnegie Mellon University, BME, Carnegie Mellon University, MSE)
- 11:00 **1521** *(Invited)* Plasmonic Patch Nanoantennas for Reproducible and High-Sensitivity Chemical Detection with Surface-Enhanced Raman Spectroscopy – F. Wang, B. P. Joshi, A. Chakrabarty (Liquid Crystal Institute, Kent State University, Kent, OH), H. Zhang (Hitron Technologies Inc, Lexington, KY), and Q. H. Wei (Liquid Crystal Institute, Kent State University, Kent, OH)
- 11:30 **1522** *(Invited)* Versatile Plasmonic Films for Sensing and Photocatalytic Applications – Y. Yang (University of Central Florida)
- 12:00 **1523** Photonic Properties of Structurally-Engineered Nanoporous Anodic Alumina and Application to Biosensing – J. Ferré-Borrull, E. Xifré-Pérez, L. K. Acosta, J. Pallares, and L. F. Marsal (Universitat Rovira i Virgili)

Emerging Sensing and Diagnostic Systems 2 – 14:00 – 18:00

Co-Chairs: Chih-Ting Lin and Yang Yang

- 14:00 **1524** *(Invited)* Local Probing of Thermally Induced Phenomena in Inorganic/Biological Materials Based on Nonlinear Cantilever Dynamics – Y. Kim (Sungkyunkwan University)
- 14:30 **1525** *(Invited)* Charge Carriers, Defects and Interfaces in Two-Dimensional Materials and Devices – Y. Liu (The University of Texas at Austin)
- 15:00 **1526** *(Invited)* Hyperbolic Metamaterials and Their Imaging, Lasing, Sensing Applications – J. Rho (Pohang University of Science and Technology (POSTECH))
- 15:30 Break
- 15:50 **1527** *(Invited)* Indium Gallium Phosphide Photodiode with 50% Increased External Quantum Efficiency and Higher Signal to Noise Ratio for Blood Pressure Measurement – Y. H. Kao, C. P. Chao (National Chiao Tung University Taiwan), A. Kumar, Y. C. Lin, and C. L. Hsu (EPSTAR Corporation)
- 16:20 **1528** *(Invited)* Photodetection from Mid-IR to UV Using Semiconductor Heterostructures – T. Wu (UNSW)
- 16:50 **1529** *(Invited)* Mid-IR Metamaterial Absorber Platform for Gas and Chemical Sensing Applications – C. Lee (National University of Singapore) and D. Hasan (National University of Singapore)
- 17:20 **1530** Detection of Low-Level Acetone Using Semiconductor Gas Sensors Based on CuO/Fe₂O₃ Hetero-Junctions – K. Kollbek, A. Szkudlarek, A. Rydosz (AGH University of Science and Technology), B. Lyson-Sypien (Silesian University of Technology), M. Marzec, and M. Przybylski (AGH University of Science and Technology)
- 17:40 **1531** Sensitivity Enhancement Techniques for Black Phosphorus-Based Gas Sensors – G. Lee, S. Kim (Korea University), S. Jung, S. Jang (Dankook University), and J. Kim (Korea University)

H04 Wearable and Flexible Electronic and Photonic Technologies

Electronics and Photonics / Dielectric Science and Technology / Energy Technology / Physical and Analytical Electrochemistry / Sensor / Interdisciplinary Science and Technology Subcommittee

Room 214, Washington State Convention Center

Session 5 – 08:00 – 13:00

Co-Chairs: Wei Gao and Durgamadhav Misra

- 08:00 **1563** *(Invited)* Toward High Frequency and High Power Flexible Electronics – Z. Ma, H. Zhang, T. H. Chang (University of Wisconsin-Madison), J. Li (Forest Products Laboratory, USDA Forest Service), K. Xiong (Yale University), H. Mi, S. Mikael, J. Kim, Y. H. Jung, J. Park, J. Lee (University of Wisconsin-Madison), J. Han (Yale University), Z. Cai (Forest Products Laboratory, USDA Forest Service), and S. Gong (University of Wisconsin-Madison)
- 08:30 **1564** *(Invited)* Electrical Energy Generation Via Reversible Chemical Doping on Carbon Nanotube Fibers – a Wearable All-Carbon Voltage Generator – A. T. Liu, Y. Kunai, P. Liu, A. Kaplan, A. Cottrill, and M. S. Strano (MIT)
- 09:00 **1565** *(Invited)* Self Healing Interconnects for Reliable Flexible Electronics – S. Sambandan (University of Cambridge, Indian Institute of Science), A. Kumar, V. Yaswant, and V. Parab (Indian Institute of Science)
- 09:30 **1566** *(Invited)* Free-Standing Two-Dimensional Nanomaterials from Functional Oxides – X. Wang (University of Wisconsin Madison)
- 10:00 Break
- 10:30 **1567** Ghost Floating Gate Effect By Tunneling-Triboelectrification in Graphene Channel – T. Y. Kim, S. Kim (Sungkyunkwan University (SKKU)), C. Falconi (University of Roma “Tor Vergata”), and S. W. Kim (Sungkyunkwan University (SKKU))
- 10:50 **1568** *(Invited)* Flexible Tactile Sensors for Wearable Healthcare Monitoring Devices – H. Ko (Ulsan National Institute of Science and Technology)
- 11:20 **1569** *(Invited)* Fully Formed Reverse Fabrication Techniques for Flexible Electronics – K. J. Yu (Yonsei University)
- 11:50 **1570** Performance Improvement of Flexible Charge-Trap Memory Transistors Using Conducting Polymer Electrodes and Sacrificial Layer on Plastic Poly(ethylene naphthalate) Substrates – J. H. Yang, D. J. Yun (Kyung Hee University), S. M. Kim, M. H. Yoon (Gwangju Institute of Science and Technology), and S. M. Yoon (Kyung Hee University)
- 12:10 **1571** Earth Abundant Transition-Metal Based High Entropy Alloys (HEAs) Nanorod Arrays Prepared by Glancing Angle Deposition System (GLAD) Toward High Performance Electrocatalysts for Water Oxidation Reaction – S. C. Wu, K. K. Tseng (Department of MSE, NTHU, Hsinchu, Taiwan), Y. Ai (University of Electronic Science and Technology of China), K. Wang, A. Manikandan, Y. Z. Chen, H. C. Chen, J. W. Yeh, and Y. L. Chueh (Department of MSE, NTHU, Hsinchu, Taiwan)

12:30 1572 *(Invited)* Bio-Inspired Helical Coil Network for Soft, Wireless Electronics – J. Song, H. H. Jung, H. N. Jung, and K. I. Jang (DGIST)

Session 6 – 14:00 – 17:00

Co-Chair: Colm O'Dwyer

14:00 1573 *(Invited)* Mechanical Design Strategies in Wearable/Flexible Electronics – M. Pharr (Texas A&M University)

14:30 1574 *(Invited)* Plant Wearable for Enhanced Agricultural Productivity – J. M. Nassar, S. M. Khan, M. Nour, A. Almuslem, and M. M. Hussain (KAUST)

15:00 1575 *(Invited)* A Stretchable Leaf Sensor for Plant Monitoring – Y. Zhao, Z. Sun, and X. Huang (Tianjin University)

15:30 1576 A Highly Sensitive Flexible Pressure Sensor Based on Polystyrene@Graphene Core-Shell Nanoballs – Y. Ai (University of Electronic Science and Technology of China), T. H. Hsu, D. C. Wu, L. Lee, J. H. Chen, Y. Z. Chen, S. C. Wu, K. Wang (Department of MSE, NTHU, Hsinchu, Taiwan), C. Wu, Z. Wang (University of Electronic Science and Technology of China), and Y. L. Chueh (Department of MSE, NTHU, Hsinchu, Taiwan)

15:50 1577 *(Invited)* Rational Design of Nanostructures and Materials for Flexible and High Performance Electronics and Optoelectronics – Z. Fan (The Hong Kong University of Science and Technology)

16:20 1578 Inkjet Printing of Graphene for Wearable and Flexible Electrochemical Sensors – T. Pandhi, D. Estrada (Boise State University), and J. E. Koehne (NASA Ames Research Center)

16:40 1579 Tuning Self-Healing Property of Stiff Supramolecular Polymer for Flexible Electronics – J. Qin, F. Lin, Y. Wang, D. Hubble, Y. Li, J. Yang, and A. Jen (University of Washington)

101

State of the Art Tutorial in Low Temperature Fuel Cell Electrocatalysis: The Challenge of High Current Density Performance at Low Platinum Loading
Energy Technology / Industrial Electrochemistry and Electrochemical Engineering / Physical and Analytical Electrochemistry

Room 614, Washington State Convention Center

Tutorial - Morning – 08:40 – 12:00

Co-Chairs: Adam Z. Weber and Karen Swider-Lyons

08:40 1580 Introduction to Performance Issues with Low Pt-Loaded Fuel-Cell Electrodes – A. Z. Weber (Lawrence Berkeley National Laboratory)

09:00 1581 Identifying the Major Source of Oxygen Transport Resistance By Modeling Studies – T. Suzuki (Toyota Central R&D Labs., Inc.), H. Yamada (Toyota Central R&D Labs., Inc.), K. Kudo, R. Jinnouchi, and Y. Morimoto (Toyota Central R&D Labs., Inc.)

09:40 Break

10:00 1582 Transport in Low Pt-Loading Cathodes: The Impact of Electrode and Catalyst Support Morphology – S. Litster (Carnegie Mellon University)

10:40 1583 Toward Ionomers for Low Pt Performance – D. Novitski (Department of Chemistry, Simon Fraser University) and S. Holdercroft (Simon Fraser University)

11:20 1584 Ionomer Thin Films for PEM Fuel Cells – A. Kusoglu (Lawrence Berkeley National Laboratory)

Tutorial - Afternoon – 13:20 – 17:40

Co-Chairs: Karen Swider-Lyons and Peter Strasser

13:20 1585 Materials and Design Selection to Improve High Current Density in PEMFC – N. Ramaswamy and S. Kumaraguru (General Motors Company)

13:40 1586 Performance, Interactions, and Degradation of Polymer Electrolyte Fuel Cell Cathode Catalysts, Supports, and Ionomers – D. J. Myers (Argonne National Laboratory)

14:20 1587 Platinum-Based PEMFC Electrodes – Can Electrodes with Low Pt Loading be Durable? – R. Chattot (Univ. Grenoble Alpes, LEPMI, F-38000 Grenoble, France, CNRS, LEPMI, F-38000 Grenoble, France), T. Asset (CNRS, LEPMI, F-38000 Grenoble, France, Univ. Grenoble Alpes, LEPMI, F-38000 Grenoble, France), F. Micoud (CEA, LITEN), C. Nayoze-Coynel (Univ. Grenoble Alpes, CEA, LITEN, DEHT), L. Dubau, F. Maillard (CNRS, LEPMI, F-38000 Grenoble, France), and M. Chatenet (LEPMI, CNRS-Univ. Grenoble Alpes)

15:00 1588 Contamination of Low Platinum Catalyst Loading Cathodes for Proton Exchange Membrane Fuel Cells – Y. Zhai, J. Qi, K. Bethune, and J. St-Pierre (University of Hawaii - Manoa)

15:40 Break

16:00 1589 Fabrication of High Power, Low-Pt Catalyst Coated Membranes – Y. Garsany (EXCET Inc.) and K. Swider-Lyons (US Naval Research Laboratory)

16:20 1590 Water Balance in Polymer Electrolyte Fuel Cells with Ultra-Low Pt Loading: From Modeling to Design – M. H. Eikerling (Simon Fraser University, Dept. Chemistry) and T. A. Muzaffar (Department of Chemistry, Simon Fraser University)

17:00 1591 *(Invited)* PEM Fuel Cell Catalyst Layer Architectures – R. L. Borup, R. Mukundan (Los Alamos National Laboratory), K. L. More (Oak Ridge National Laboratory), S. S. Kocha (National Renewable Energy Laboratory), A. Z. Weber (Lawrence Berkeley National Laboratory), D. J. Myers, and R. Ahluwalia (Argonne National Laboratory)

Ballroom 6ABC, Washington State Convention Center

101 Poster Session – 18:00 – 20:00

Co-Chair: Adam Z. Weber

• 1592 Design and Optimization of PEMFC Electrode for Direct Roll-to-Roll Coating Process – J. H. Kim (2B Research Group, Kolon Central Research Park)

• 1593 The Influence of the Platinum Loading and the Ionomer to Carbon Ratio on the Durability of the PEMFC – V. Andrea (Istituto de Pesquisas Energéticas e Nucleares - IPEN), E. I. Santiago (CCCH-IPEN/CNEN-SP, Brazil), F. C. Fonseca (IPEN, Brazil), and M. Linardi (IPEN/CNEN-SP)

Electrosynthesis of Fuels 5

Industrial Electrochemistry and Electrochemical Engineering / Energy Technology / High Temperature Materials / Organic and Biological Electrochemistry / Physical and Analytical Electrochemistry
Room 617, Washington State Convention Center

Session 1 – 08:00 – 12:00**Co-Chairs: Hui Xu, Whitney Goldsborough Colella, and William E. Mustain**

- 08:00 **1594** *(Invited)* Electrochemical Fuels Production Using High Temperature Alkaline Electrolytes – H. Xu (Giner, Inc.)
- 08:30 **1595** *(Invited)* Electrochemical Generation of Fuels: Matching Research and Application for Advanced Water Splitting and Other Technologies – K. E. Ayers, W. L. Gellett, and C. B. Capuano (Proton OnSite)
- 09:00 **1596** Co-Production of Ethylene and Hydrogen Via Non-Oxidative Dehydrogenation of Ethane Below 400°C – W. Wu (Idaho National Laboratory), Y. Zhang (Idaho National Lab), T. He, and D. Ding (Idaho National Laboratory)
- 09:20 **1597** Power to Chemicals with High Temperature Solid Oxide Cells: Concepts, Challenges & Prospects – R. Costa, F. Han, M. Lang, N. Sata, and G. Schiller (German Aerospace Center, DLR)
- 09:40 **1598** Redox Stable Cathodes for CO₂-Steam Co-Electrolysis Process in Solid Oxide Electrolyzers for Syn-Gas Generation – A. P. Kulkarni, G. Kaur, D. Fini, S. Giddey (CSIRO Australia), T. Hos, and M. Herskowitz (Ben Gurion University at Negev, Israel)
- 10:00 Break
- 10:10 **1599** Solid Oxide Electrolysis for Hydrogen Production: From Oxygen Ion to Proton Conducting Cells – B. Hu (Materials Science and Engineering, Univ. of Connecticut), A. N. Aphale (Materials Science and Engineering, Univ of Connecticut), S. J. Heo (Materials Science & Engineering, Univ. of Connecticut), J. Hong (Center for Clean Energy Eng. University of Connecticut), O. A. Marina, J. W. Stevenson (Pacific Northwest National Laboratory), and P. Singh (Materials Science and Engineering, Univ. of Connecticut)
- 10:30 **1600** Thermodynamic, Environmental, and Economic Analysis of Electrosynthesis of Hydrogen Fuel with State-of-the-Art Solid Oxide Electrolyzers – W. G. Colella (Gaia Energy Research Institute LLC)
- 10:50 **1601** PBI-Blended Membrane Evaluated in High Temperature SO₂ Electrolyser – P. Retha (NWU, Focus Area: Chemical Resource Beneficiation, Institute of Chemical Process Engineering, Stuttgart), H. Krieg (NWU, Focus Area: Chemical Resource Beneficiation), A. Kruger, D. Bessarabov (NWU HySA Infrastructure), and J. A. Kerres (University of Stuttgart, Institute of Chem. Proc. Eng.)
- 11:10 **1602** Electrochemical Synthesis of H₂O₂ Via Water Electrolysis – S. Siahrostami (Department of Chemical Engineering, Stanford University), X. Shi (Stanford University), H. Abroshan (Department of Chemical Engineering, Stanford University), X. Zheng (Stanford University), and J. Nørskov (Stanford University)

- 11:30 **1603** *(Invited)* New Insight into Acetic Acid Electrochemical Oxidation for the Synthesis of Chemicals and Fuels on Platinum Electrodes in Mild Alkaline Media – X. Peng (University of South Carolina), T. Omasta (University of Connecticut), and W. E. Mustain (University of South Carolina)

Session 2 – 14:00 – 18:00**Co-Chairs: Gessie M. Brisard, Turgut M. Gur, and Karthish Manthiram**

- 14:00 **1604** Controlled Selectivity of CO₂ Reduction on Metal Electrodes By Pulsing the Electrochemical Potential – K. W. Kimura, J. Suntivich, and T. Hanrath (Cornell University)
- 14:20 **1605** Designing Carbon-Based Materials for Effective Electrochemical Reduction of CO₂ – S. Siahrostami (Department of Chemical Engineering, Stanford University), K. Jiang (Rowland Institute, Harvard University), C. S. Kirk, M. Karamad (Department of Chemical Engineering, Stanford University), K. Chan (SLAC National Accelerator Laboratory), H. Wang (Rowland Institute, Harvard University), and J. Nørskov (Stanford University)
- 14:40 **1606** Modeling and Test-Bed Development of Vapor Feed Electrochemical CO₂ Reduction Devices – C. Xiang (Joint Center for Artificial Photosynthesis, Caltech)
- 15:00 **1607** Design of Rutile Oxide Electrocatalysts for Selective Reduction of CO₂ into Liquid Fuels – A. Bhowmik, H. A. Hansen, and T. Vegge (Technical University of Denmark)
- 15:20 **1608** The Role of Central Metal Atom and Ligand in Transition Metal Based Metal Organic Frameworks for Selective Electrochemical Reduction of CO₂ to Value-Added Chemicals – P. Kolla, I. Kendrick, T. Miller (Northeastern University), and S. Mukerjee (Chemistry and Chemical Biology, Northeastern University)
- 15:40 **1609** Local Atomic Modulation of Metal Sites Drives Efficient Electrochemical Reduction of CO₂ – X. Zheng (Stanford University), E. H. Sargent (University of Toronto), and Y. Cui (Stanford University)
- 16:00 **1610** Beyond Flatland: Exploring 3D Cu Catalysts for CO₂ Reduction – V. Vedharathinam, Z. Qi, M. Stadermann, J. Biener, and M. M. Biener (Lawrence Livermore National Laboratory)
- 16:20 **1611** Electrochemical Reduction of Carbon Dioxide at Alloy Systems: Cu-In and Cu-Bi – G. Zangari (University of Virginia)
- 16:40 **1612** In-Situ XRD during Electrochemical CO Reduction on Cu – E. Bertheussen, S. B. Scott, T. Hogg (Technical University of Denmark), C. Hahn (SLAC National Accelerator Laboratory), D. C. Higgins (Stanford University), J. Lin (Stanford University Department of Chemical Engineering), A. T. Landers (Stanford University Department of Chemistry), T. F. Jaramillo (Stanford University), I. Chorkendorff, and B. Seger (Technical University of Denmark)

- 17:00 **1613** *(Invited)* B-Doped Pd Catalyst to Boost Formate Production in Electrochemical CO₂ Reduction – B. Jiang (iChEM and Department of Chemistry, Fudan University), X. G. Zhang (iChEM and Department of Chemistry, Xiamen University), K. Jiang (Rowland Institute, Harvard University), D. Y. Wu (iChEM and Department of Chemistry, Xiamen University), and W. B. Cai (iChEM and Department of Chemistry, Fudan University)
- 17:30 **1614** *(Invited)* Mechanistic Insights into Highly Active Metal Phthalocyanine Catalysts for Electrochemical Carbon Dioxide Reduction – K. Manthiram (Massachusetts Institute of Technology)

Ballroom 6ABC, Washington State Convention Center

102 Poster Session – 18:00 – 20:00

- **1615** Quasi-2D Pd/Pt Nanoclams for CO₂ Reduction in Tandem with Microbial Communities – A. B. Wong (Stanford University Department of Chemical Engineering), F. Kracke (Stanford University Civil and Environmental Engineering), A. D. Antoniuk-Pablant (Stanford University Department of Chemical Engineering), C. Hahn (Stanford University), A. M. Spormann (Stanford University Civil and Environmental Engineering), and T. F. Jaramillo (Stanford University)
- **1616** Effects of Cations and Anions in Aqueous Solution on the Electroreduction of Carbon Dioxide – Q. Zhang, W. Xu (College of Science, Shanghai University), Y. Liu (Institute of Sustainable Energy, Shanghai University), and J. Zhang (Institute for Sustainable Energy, Shanghai University)
- **1617** Metal Sulfides As Catalysts for the Electrochemical Reduction of Carbon Dioxide – W. Xu, Q. Zhang (College of Science, Shanghai University), Y. Liu (Institute of Sustainable Energy, Shanghai University), and J. Zhang (Institute for Sustainable Energy, Shanghai University)
- **1618** Co₃O₄@CNT@PQ7 As the New Air Electrode Material to Enhance the Performance in Zinc-Air Battery Applications – Q. Nie, C. Liu, Y. Zhou, L. Peng, and J. Qiao (Donghua University)
- **1619** N/S-Me (Fe, Ni) Doped Porous Carbon Derived from Metal–Organic Frameworks As Efficient Electrocatalysts for Oxygen Reduction Reactions – F. Dong, Q. Tang, J. Liu, C. Liu, and J. Qiao (Donghua University)
- **1620** Electrochemical Reduction of CO₂ to Formate on Sn@Cu By Electrodeposition with Hydrogen Bubble Template – X. Hou, J. Liu, Q. Zhang, Y. Zhou, and J. Qiao (Donghua University)
- **1621** High-Efficiency Photocatalysts for CO₂ Conversion Based on MoS₂/CdS/TiO₂ Nanotubes Heterostructures – K. Du, G. Liu, X. Chen, and K. Wang (IMS, University College of Southeast Norway)

- **1622** Copper Oxide-Based Photocathodes and Electrocatalysts for the (Photo) Electrochemical Reduction of Protons and Carbon Dioxide – M. T. Mayer (Helmholtz-Zentrum Berlin), M. Schreier (Massachusetts Institute of Technology), J. Luo (Ecole polytechnique fédérale de Lausanne), and M. Graetzel (Ecole Polytechnique Federale de Lausanne)
- **1623** Electrochemical Conversion of CO₂ with Nanoporous Poly(styrene)-Polyvinylpyridine – H. Ghebremichael and A. Sidorenko (University of the Sciences)

103

103 Oxygen or Hydrogen Evolution Catalysis for Water Electrolysis 4

Energy Technology / Industrial Electrochemistry and Electrochemical Engineering / Physical and Analytical Electrochemistry

Room 606, Washington State Convention Center

OER in Alkaline Media 2 – 08:00 – 12:15

Co-Chairs: Hui Xu and Pawel J. Kulesza

- 08:00 Introductory Remarks
- 08:05 **1683** *(Invited)* Engineering Advanced Transition-Metal Based Electrocatalysts for Oxygen Evolution Reaction – J. Song, S. Fu, Q. Shi, C. Zhu, D. Du, and Y. Lin (Washington State University)
- 08:35 **1684** Mixed Oxides/Phosphides As Efficient Electrocatalysts for Oxygen Evolution Reaction – L. Zhang (Anhui University of Science and Technology), C. Chang (Bohai University), and S. Y. Lu (National Tsing Hua University)
- 08:55 **1685** Mesoporous Metal Electrocatalysts for the Oxygen Evolution Reaction – A. Hayashi, M. Muto, and K. Sasaki (Kyushu University)
- 09:15 **1686** The Enhancement Effect of Borate Doping on the Oxygen Evolution Activity of α -Nickel Hydroxide – Z. Zhang, T. Zhang, and J. Y. Lee (National University of Singapore)
- 09:35 **1687** Carbon-Free Perovskite Oxide Oxygen Evolution Reaction Catalysts for AEM Electrolyzer – H. T. Chung, A. S. S. Lee, Y. S. Kim (Los Alamos National Laboratory), C. Fujimoto (Sandia National Laboratory), L. W. Wang (Lawrence Berkeley National Laboratory), G. Teeter, G. Bender (National Renewable Energy Laboratory), and P. Zelenay (Los Alamos National Laboratory)
- 09:55 **1688** Ion Intercalation Induced Amorphization of High Surface Area Cobalt (II, III) Oxide (Co₃O₄) for Enhanced Water Oxidation Activity – P. K. Gupta, S. Saha, K. Kishor, A. Sharma, and R. G. Pala (Indian Institute of Technology Kanpur)
- 10:15 Intermission
- 10:25 **1689** *(Invited)* Active and Stable Metal Supported Thin Film Metal (Hydroxy-) Oxides for Oxygen Reduction/Evolution Reactions – S. Back (Stanford University), S. Siahrostami (Department of Chemical Engineering, Stanford University), and J. Nørskov (Stanford University)
- 10:55 **1690** Effect of Co Addition in Amorphous Ni-Based Alloys for the Alkaline Oxygen Evolution Reaction – K. M. Cole, D. W. Kirk, and S. J. Thorpe (University of Toronto)

- 11:15 **1691** Efficient Surface-Modified Steel Electrodes for Oxygen Evolution in Alkaline Media – D. Mitra, A. Irshad, S. R. Aravamathan, and S. R. Narayanan (University of Southern California)
- 11:35 **1692** Electrochemical Preparation of Copper-Cobalt Oxide Nanosheets Array on Nickel Foam As the Catalyst for Oxygen Evolution Reaction – W. S. Choi (Korea Institute of Materials and Science), M. J. Jang (University of Science and Technology), Y. S. Park, K. H. Lee, and S. M. Choi (Korea Institute of Materials and Science)
- 11:55 **1693** High-Temperature Molten Alkaline Water Electrolysis – K. Patil, A. Sweet, W. Greene (Giner, Inc), and H. Xu (Giner, Inc.)

OER in Alkaline Media 3 – 13:55 – 16:00

Co-Chairs: Gang Wu and Shuai Zhao

- 13:55 Introductory Remarks
- 14:00 **1694** *(Invited)* Individual Nanowire/Sheet Devices for Electrocatalysis – M. Yan, J. Yang (University of Washington), and L. Mai (Wuhan University of Technology)
- 14:30 **1695** Morphology Control of Carbon-Free Spinell NiCo₂O₄ Catalysts for Enhanced Bifunctional Oxygen Reduction and Evolution in Alkaline Media – S. Devaguptapu (University at Buffalo), S. Zhao (Giner, Inc.), S. Gupta (University at Buffalo), H. Xu (Giner, Inc.), and G. Wu (University at Buffalo, the State University of New York)
- 14:50 **1696** Activity and Stability Trend of Transition Metal Hydr(oxy)Oxide for Oxygen Evolution Reaction – D. Y. Chung, P. F. B. D. Martins (Argonne National Laboratory), P. P. Lopes (Argonne National Laboratory), D. Strmcnik, V. Stamenkovic, and N. M. Markovic (Argonne National Laboratory)
- 15:10 **1697** Facile Deposition of Transition Metal Phosphides into Mesoporous Carbon: Iron's Role in Oxygen Evolution Catalysis – D. P. Leonard (Oregon State University), W. F. Stickle (Hewlett-Packard Co.), and X. Ji (Oregon State University)
- 15:30 **1698** A Bifunctional Electrocatalyst for Full Water Splitting: CoNi@BSCF Encapsulated in N-Doped Carbon – Y. Lyu and F. Ciucci (The Hong Kong University of Science and Technology)
- 15:50 Intermission

Hydrogen Evolution Reaction 1 – 16:00 – 18:20

Co-Chairs: Sanjeev Mukerjee and Katherine E. Ayers

- 16:00 **1699** *(Invited)* Enhancing HER and OER Electrocatalysis – P. P. Lopes (Argonne National Laboratory), D. Strmcnik, D. Li, N. M. Markovic, and V. Stamenkovic (Argonne National Laboratory)
- 16:30 **1700** Hydrogen Bubble Templating of Fractal Ni Foams for Water Oxidation in Alkaline Media – S. Garbarino, V. Charbonneau, N. Nzone Fomena, J. Gaudet (INRS-EMT), D. R. Bruce (ZincNyx Energy Solutions Inc), and D. Guay (INRS-EMT)
- 16:50 **1701** Improving Hydrogen Evolution Reaction Activity of Palladium By Ruthenium – L. Zhang, C. Feng, and M. Shao (The Hong Kong University of Science and Technology)

- 17:10 **1702** Tuning Ni Surfaces for Enhanced Oxygen Evolution Reaction in Alkaline pH – I. Kendrick, M. Bates (Northeastern University), Q. Jia (Chemistry and Chemical Biology, Northeastern University), H. Doan, W. Liang (Northeastern University), and S. Mukerjee (Chemistry and Chemical Biology, Northeastern University)
- 17:30 **1703** *(Invited)* Current Understandings of the Slow Kinetics of the Hydrogen Evolution Reaction in Alkaline Media – S. Mukerjee, J. Li, and Q. Jia (Northeastern University)
- 18:00 **1704** Nickel Electrocatalyst Promoted By Laccase Oxidase on Carbon Support for Hydrogen Evolution Reaction in Alkali Media – M. J. Jang (Korea Institute of Materials and Science, University of Science and Technology), Y. S. Park, W. S. Choi, S. M. Choi (Korea Institute of Materials and Science), and K. H. Lee (University of Science and Technology, Korea Institute of Materials and Science)

104

Materials for Low Temperature Electrochemical Systems 4

Energy Technology / Industrial Electrochemistry and Electrochemical Engineering / Physical and Analytical Electrochemistry

Room 611, Washington State Convention Center

PEMFC Performance 3 – 08:00 – 10:00

Co-Chairs: Thomas A. Zawodzinski and Hyoung-Juhn Kim

- 08:00 **1773** Soldering a Gas Diffusion Layer Onto Stainless Steel Bipolar Plates Using Tin and Tin Alloys – K. McCay (Norwegian University of Science and Technology), O. E. Kongstein, A. O. Barnett (SINTEF Materials and Chemistry), and F. Seland (Norwegian University of Science and Technology)
- 08:20 **1774** Synthesis and Properties of s-PBI/2OH-PBI Random Copolymer for High Temperature PEM Fuel Cells – J. S. Lee, M. J. Lee (Fuel Cell Research Center, KIST), S. Y. Lee (Korea Institute of Science and Technology), J. H. Jang (Korea Institute of Science and Technology (KIST)), and H. J. Kim (Fuel Cell Research Center, KIST)
- 08:40 **1775** Miniature Fuel Cell with Monolithically Fabricated Si Electrodes - Application of a Polymer Electrolyte Membrane with Adapted Shape – Y. Kushida, A. Sawada (Tokyo University of Science), K. Kono (Toray Industries, Inc.), Y. Oshiba, T. Yamaguchi (Tokyo Institute of Technology), and M. Hayase (Tokyo University of Science)
- 09:00 **1776** Water Activity Dependence of Oxygen Evolution Reaction Catalysts and Carbon Corrosion of Reversal Tolerant Fuel Cell Anodes during Hydrogen Starvation Conditions – T. Joo, L. Hu (Carnegie Mellon University), B. K. Hong (Hyundai-Kia Motors), J. G. Oh (Hyundai Motor Company), and S. Litster (Carnegie Mellon University)

- 09:20 1777 3M Ionomer Adsorption on Polymer Electrolyte Membrane Fuel Cell Electrodes – N. M. Cantillo (The University of Tennessee - Knoxville), J. Peng (University of Tennessee-Knoxville), B. Sneed (Oak Ridge National Laboratory), G. A. Goenaga (University of Tennessee Knoxville), K. L. More (Oak Ridge National Laboratory), and T. A. Zawodzinski Jr. (University of Tennessee-Knoxville)
- 09:40 Break

General Electrocatalysis 3 – 10:00 – 12:40

Co-Chairs: Jin Suntivich and Marian Chatenet

- 10:00 1778 Durability of Platinum-Based Carbon-Supported Electrocatalysts in Liquid Versus Solid Polymer Alkaline Electrolytes – C. Lafforgue (Grenoble Alpes - CNRS - LEPMI), L. Dubau, F. Maillard (CNRS, LEPMI, F-38000 Grenoble, France), D. R. Dekel (Technion Israel Institute of Technology), and M. Chatenet (LEPMI, CNRS-Univ. Grenoble Alpes)
- 10:20 1779 Porous Hollow Pt/C Electrocatalysts: Carbon Support Considerations to Meet Stability Requirements – T. Asset (Univ. Grenoble Alpes, LEPMI, F-38000 Grenoble, France, University of New Mexico, Albuquerque, NM 87131, USA), N. Job (Université de Liège), Y. Busby (University of Namur ASBL, 5000 Namur, Belgium), A. Crisci (SIMaP), V. Martin (CNRS, LEPMI, F-38000 Grenoble, France), V. Stergiopoulos (University of Liège, 4000 Liège, Belgium), C. Bonnaud (CNRS, LEPMI, F-38000 Grenoble, France), A. Serov, P. Atanasov (University of New Mexico), R. Chattot (CNRS, LEPMI, F-3800 Grenoble, France), L. Dubau, and F. Maillard (CNRS, LEPMI, F-38000 Grenoble, France)
- 10:40 1780 Electronic Structure and Growth of Electrochemically Formed Iridium Oxide Films – L. I. Ilyukhina (Norwegian University of Science and Technology (NTNU)), R. G. Haverkamp (Massey University), and S. Sunde (Norwegian University of Science and Technology (NTNU))
- 11:00 1781 Impact of Heat Treatment on the Electrochemical Properties of Octahedral Pt-Ni Nanoparticles – F. Xiao (HongKong University of Science and Technology) and M. Shao (The Hong Kong University of Science and Technology)
- 11:20 1782 Oxygen Electro-Adsorption Measurements on IrO₂(110) and RuO₂(110): Evidence for Scaling Relations and Design Insights for Oxygen-Evolution Catalysts – D. Y. Kuo, H. Paik, J. N. Nelson (Cornell University), J. Kloppenburg, G. Hautier (Université catholique de Louvain), K. M. Shen, D. G. Schlom, and J. Suntivich (Cornell University)
- 11:40 1783 Unveiling the Degradation Pathway of Highly Defective Hollow PtNi/C in Operando Conditions – L. Dubau (CNRS, LEPMI, F-38000 Grenoble, France), T. Asset (University of New Mexico, Albuquerque, NM 87131, USA), J. Nelayah (MPQ - Paris), R. Chattot (CNRS, LEPMI, F-3800 Grenoble, France), P. Bordet (CNRS, Inst. Néel, 38000 Grenoble, France), J. Drnec (European Synchrotron Radiation Facility), and F. Maillard (CNRS, LEPMI, F-38000 Grenoble, France)

- 12:00 1784 Metal Phosphides As Electrocatalyst and Supports for PEM Fuel Cells – A. Parra Puerto (Department of Chemistry - Imperial College London), K. F. Fahy, A. E. Goode, M. P. Ryan, A. R. J. Kucernak, and K. L. NG (Imperial College London)
- 12:20 1785 The Synthesis of Cerium Oxide Antioxidant Supported on Silica Nanotube for Polymer Electrolyte Membrane Fuel Cell – S. I. Oh, S. Y. Lee (Korea Institute of Science and Technology), J. J. Ko (Hyundai Motor Group), J. H. Han (Korea Institute of Science and Technology), and H. J. Kim (Korea Institute of Science and Technology (KIST))

Other Fuel Cells – 14:00 – 16:00

Co-Chairs: Stuart Holmes and Vijay Ramani

- 14:00 1786 Bipolar Polymer Electrolyte Interfaces As Separators for High Performance Direct Borohydride Fuel Cells – Z. Wang (Washington University in Saint Louis), J. Parrondo (Washington University in St. Louis), C. He, S. Sankarasubramanian, and V. K. Ramani (Illinois Institute of Technology)
- 14:20 1787 Employment of Fiber-Shaped Cobalt Modified with Gold Nanoparticles As Anode in Direct Borohydride and Hydrazine Fuel Cells – A. Balciunaite, A. Zabielaite, L. Tamasauskaitė-Tamasiunaite, and E. Norkus (Center for Physical Sciences and Technology)
- 14:40 1788 Optimum Membrane for Formic Acid Electro Oxidation – R. Gonzalez Rodriguez, M. Perezpage, R. Sellin, and S. Holmes (The University of Manchester)
- 15:00 1789 Low Cost PCB Fuel Cells Based for Small Electronic Applications – A. Parra Puerto (Department of Chemistry - Imperial College London), L. Hakola (VTT TECHNICAL RESEARCH CENTRE), and A. R. J. Kucernak (Imperial College London)
- 15:20 1790 Holey Graphene Aerogel to Support Pt Nanoparticles for Direct Methanol Fuel Cell – X. Zhang, W. Yuan, Y. Zhang, and X. Liu (Harbin Institute of Technology)
- 15:40 1791 Enhanced Nano-Catalyst Infiltration of Anode-Supported SOFCs through Surface Modification of Electrodes By Catechol Surfactants – O. Ozmen (U.S. DOE, National Energy Technology Laboratory, West Virginia University), S. Lee (U.S. DOE, National Energy Technology Laboratory), J. W. Zondlo (West Virginia University), G. A. Hackett (U.S. DOE National Energy Technology Laboratory), H. Abernathy (AECOM), and E. M. Sabolsky (West Virginia University, U.S. DOE, National Energy Technology Laboratory)

Fuel Cell Characterization 2 – 16:00 – 18:00

Co-Chairs: Antoni Forner-Cuenca and Elod L. Gyenge

- 16:00 1792 Interfacial Characteristics of Graphene Containing Novel Microporous Layers for PEM FCs – M. J. Leeuwener, D. P. Wilkinson, and E. L. Gyenge (University of British Columbia)

- 16:20 **1793** Diffusion Layers with Localized Hydrophilic Domains: Influence of Electron Energy on Spatial Resolution – A. Forner-Cuenca, V. Manzi-Orezzoli, L. Gubler (Electrochemistry Laboratory, Paul Scherrer Institute), T. J. Schmidt (Laboratory of Physical Chemistry, ETH Zürich), and P. Boillat (LNS Laboratory, Paul Scherrer Institute)
- 16:40 **1794** In Situ X-Ray Scattering Characterization of PEMFC Catalyst Ink Microstructure during Ink Processing – J. Park, N. Kariuki, D. J. Myers (Argonne National Laboratory), S. A. Mauger, K. C. Neyerlin, and M. Ulsh (National Renewable Energy Laboratory)
- 17:00 **1795** Characterization of Nafion®XL Properties after Ex-Situ and In-Situ Degradations – M. Robert, A. El kaddouri, J. C. Perrin, S. Leclerc, J. Dillet, K. Mozet, and O. Lottin (LEMTA, Université de Lorraine, Vandoeuvre-lès-Nancy)
- 17:20 **1796** *In Situ* Monitoring of Co Cation Migration in an Operating MEA via Synchrotron Micro-X-Ray Fluorescence – Y. Cai, J. M. Ziegelbauer (Global Fuel Cell Business, General Motors), A. M. Baker (Los Alamos National Laboratory), W. Gu, A. Kongkanand (Global Fuel Cell Business, General Motors), R. Mukundan, and R. L. Borup (Los Alamos National Laboratory)
- 17:40 **1797** In-Situ Electrochemical X-Ray Diffraction of Pt Oxidation and Reduction in Hydrogen Fuel Cells – I. Martens (University of British Columbia), J. Drnec (ESRF Grenoble), M. V. Blanco (European Synchrotron Radiation Facility (ESRF)), J. Pusa (Aalto University), V. Honkimäki (European Synchrotron Radiation Facility (ESRF)), D. P. Wilkinson, and D. Bizzotto (University of British Columbia)

Ballroom 6ABC, Washington State Convention Center

104 Poster Session – 18:00 – 20:00

- **1798** MOF-Based Nano-Cuboids Electrocatalyst for OER-HER Reactions – W. Ahn (SoonChunHyang University), M. G. Park (University of Waterloo), and D. U. Lee (Stanford University)
- **1799** Preparation and Characterization of Monovalent Cation Selective Membranes Prepared by a Layer-By-Layer Pore-Filled Technique – Y. W. Choi (Korea Institute of Energy Research), N. Kang (Korea Institute of Energy Research, Chonbuk National Univ.), N. J. Jeong, and C. S. Kim (Korea Institute of Energy Research)
- **1800** Reinforced Nanocomposite Polymer Electrolyte Membrane and Its Characterization Fabricated by an Innovatively Simple Process for PEMFC – Y. W. Choi, S. Jang, and Y. G. Yoon (Korea Institute of Energy Research)
- **1801** In-Situ Electrochemical Characterization of Proton Exchange Membranes for Water Electrolysis – A. Hohenadel, H. F. Lee (Simon Fraser University), T. Khoza (University of Cape Town), A. O. Barnett (SINTEF Materials and Chemistry), and S. Holdcroft (Simon Fraser University)
- **1802** Annealing Effect of Nafion-Propyl-1,2,3-Triazole Membrane By Autoclave Solution Processing – J. D. KIM (National Institute for Materials Science), L. J. Ghil (National Institute for Materials Science (NIMS)), and A. Ohira (AIST)
- **1803** Nickel Nanoparticles Decorating Graphite Flake Surface Using Planetary Ball Milling: Physical Characterization and Methanol Electrooxidation Investigation – Y. Garcia-Basabe, R. O. R. Rodrigues da Cunha, J. R. C. Salgado (Federal University for Latin American Integration), D. G. Larrude (Universidade Presbiteriana Mackenzie), and K. D. Sossmeier (Federal University for Latin American Integration)
- **1804** The Enhancement of Hydrogen Oxidation Activity and the Optimization of Alloy Composition in PdRu Nanoparticle Catalysts – K. Kwon (Dept of Energy & Mineral Resources Eng, Sejong University), S. A. Jin (School of Materials Engineering, Purdue University), J. Cho (Korea Institute of Science and Technology (KIST)), H. C. Ham (Fuel Cell Research Center, KIST), and C. Pak (GET, SIT, IIT, Gwangju Institute of Science and Technology)
- **1805** Proton-Conductive Block Copolyphenylchinoxalines Ionomers for Fuel Cells and Electrolysis – S. Janietz, H. Krüger Sr., and T. Egorov-Brening (Fraunhofer-IAP)
- **1806** Bimetallic Nano Electrocatalyst for HER in Alkaline Polymer Electrolysis – A. Y. Faid, M. Manikandan, F. Seland (Norwegian University of Science and Technology), A. O. Barnett (SINTEF Materials and Chemistry), and S. Sunde (Norwegian University of Science and Technology)
- **1807** Zirconia Doped Ceria Cathodic Interlayer By Atomic Layer Deposition for Low Temperature Solid Oxide Fuel Cell – B. C. Yang, D. Go, S. Oh, J. W. Shin, and J. An (Seoul National University of Science and Technology)
- **1808** Stable and Active Polymer Electrolyte Membrane Electrolyzers Utilizing Transition Metal Phosphide Hydrogen Evolution Catalysts – L. A. King (Stanford University), M. Hubert (Stanford University Department of Chemical Engineering), C. B. Capuano (Proton OnSite), J. Manco (Proton OnSite), N. Danilovic (Proton OnSite), T. Hellstern (Stanford University Department of Chemical Engineering), and T. F. Jaramillo (Stanford University)
- **1809** Temperature Dependence on Oxygen Reduction Reaction for Carbon-Supported Pd-Core/Pt-Shell Electrocatalysts – T. Uchiyama (Kyoto University), L. Chen, K. Yamamoto (Kyoto University), H. Tanida (Device Analysis Department, NISSAN ARC, Ltd.), N. Takao (Device-functional analysis Department, NISSAN ARC, Ltd.), H. Imai (Device Analysis Department, NISSAN ARC, Ltd.), K. Yokoyama, S. Sugawara (FC-Cubic Technology Research Association), K. Shinohara (Fuel Cell Cutting-edge Research Center (FC-Cubic)), and Y. Uchimoto (Human and Environmental Studies, Kyoto University)

- **1810** Temperature Dependence of the Oxygen Reduction Reaction Activity and Local Structural Analysis of Pt/C Catalyst – N. Nagata (Kyoto University), Y. Horie (Kyoto University), T. Uchiyama (Kyoto University), K. Yamamoto (Graduate School of Human and Environmental Studies), H. Tanida (Device Analysis Department, NISSAN ARC, Ltd.), N. Takao (Device-functional analysis Department, NISSAN ARC, Ltd.), H. Imai (Device Analysis Department, NISSAN ARC, Ltd.), K. Yokoyama, S. Sugawara (FC-Cubic Technology Research Association), K. Shinohara (Fuel Cell Cutting-edge Research Center (FC-Cubic)), and Y. Uchimoto (Human and Environmental Studies, Kyoto University)
- **1811** Preparation Condition Optimization and Characterization of Pt-Ni/C Octahedral Nanocrystal Catalyst for ORR – J. Wang, B. Li, D. Yang, H. Lv, and C. Zhang (School of Automotive Studies, Clean Energy Automotive Engineering Center)
- **1812** Rational Design of Ir-M Nanoalloy for PEMFC Cathode Application: Combined Computational and Experimental Study – J. Cho, I. Jang, H. S. Park, S. H. Choi, J. H. Jang, H. J. Kim, S. P. Yoon, S. J. Yoo, and H. C. Ham (Korea Institute of Science and Technology (KIST))
- **1813** Dispersing Effect of Poly (vinyl pyrrolidone) Addition on Platinum/Tin Phosphate/Carbon Black Bifunctional Catalysts for Direct Methanol Fuel Cell – C. Y. Huang, Y. C. Cheng, and S. K. Yen (National Chung Hsing University)
- **1814** On the Effect of Clamping Pressure and Method on the Current Mapping of Proton Exchange Membrane Water Electrolysis – S. Al Shakhshir, F. Zhou, and S. K. Kær (Department of Energy Technology, Aalborg University)
- 10:15 **1878** (*Invited*) Development of Molecular Photocathodes Based on Metal Complex Photocatalyst and Their Application for Photoelectrochemical CO₂ Reduction in Aqueous Electrolyte – H. Kumagai and O. Ishitani (Tokyo Institute of Technology)
- 10:40 **1879** (*Invited*) Singularity in Chemistry: Digitally Controlled Kinetics of Titania-Photocatalyzed Oxygen Evolution – B. Ohtani (Institute for Catalysis, Hokkaido University, Graduate School of Environmental Science, Hokkaido Univ), S. Takeuchi (Graduate School of Environmental Science, Hokkaido Univ.), M. Takase (Graduate School of Engineering, Muroran Institute of Tech), and M. Takashima (Institute for Catalysis, Hokkaido University, Graduate School of Environmental Science)
- 11:05 **1880** (*Invited*) Rationally Designed Semiconductor/Nanocarbon Photoelectrodes for Solar Fuel Generation – E. Keccsenovity, B. Endrodi (University of Szeged - Hungarian Academy of Sciences), and C. Janáky (University of Szeged)
- 11:30 **1881** (*Invited*) Electrodeposition of Cu_xCo_{3-x}O₄ As Highly Efficient Oxygen Evolution Catalyst – N. C. D. Nath (Dongguk University), H. Park (School of Energy Engineering), and J. J. Lee (Dongguk University)
- 11:55 **1882** (*Invited*) Constructing Efficient Photocatalysts Based on the Bonding Difference – G. Liu (Institute of Metal Research, Chinese Academy of Sciences)

Narrow Band Gap Materials and Devices 1 – 13:30 – 15:55
Co-Chairs: Nicolas Gaillard and Eric L. Miller

- 13:30 **1883** (*Invited*) Inverted Metamorphic Multijunction III-Vs for Photo-Electrochemical Hydrogen Production Systems: Challenges in Absorber Stabilization and Device Scale-up – J. L. Young, W. E. Klein, M. Steiner, and T. G. Deutsch (National Renewable Energy Laboratory)
- 13:55 **1884** (*Invited*) Wide Bandgap Copper Chalcopyrite Candidates for Renewable Hydrogen Generation – N. Gaillard, A. D. DeAngelis, and K. Horsley (University of Hawaii)
- 14:20 **1885** (*Invited*) Novel Band-Gap Engineered III-V Alloys for Unassisted Water Photoelectrolysis – M. K. Sunkara (Conn Center for Renewable Energy Research) and S. Calero (University of Louisville)
- 14:45 **1886** (*Invited*) Preparation of Dumbbell-Shaped Nanocrystals Composed of ZnS-AgInS₂ Solid Solution and Their Photocatalytic H₂ Evolution Activity – T. Torimoto, S. Koyama, T. Kameyama (Graduate School of Engineering, Nagoya University), and S. Kuwabata (Graduate School of Engineering, Osaka University)
- 15:10 **1887** (*Invited*) Photophysics of Cesium Lead Halide Perovskite Quantum Dots Designed for Efficient Solar Energy Conversion – I. Robel (Los Alamos National Laboratory)
- 15:35 Break

105

Renewable Fuels via Artificial Photosynthesis or Heterocatalysis 3

Energy Technology / Organic and Biological Electrochemistry / Physical and Analytical Electrochemistry
 Room 612, Washington State Convention Center

Heterocatalysts and Photocatalysts – 08:15 – 12:25

Co-Chairs: Bunsho Ohtani and Jae-Joon Lee

- 08:15 **1874** (*Invited*) High Surface Area, Amorphous Titania with Reactive Ti³⁺ through a Photo-Assisted Synthesis Method for Photocatalytic H₂ Generation – C. K. Chan (Arizona State University), D. Zywitzki (Ruhr University Bochum), and H. Tüysüz (Max-Planck-Institut für Kohlenforschung)
- 08:40 **1875** (*Invited*) Multifunctional Membrane Coated Electrocatalysts – N. Y. Labrador and D. V. Esposito (Columbia University)
- 09:05 **1876** (*Invited*) Photoelectrochemical Properties of Bare or Modified TiO₂ Films – C. Garlisi, L. Ozer, M. Chiesa, and G. Palmisano (Khalifa University of Science and Technology)
- 09:30 **1877** (*Invited*) Charge Transfer Behaviour of Modified Titania Nanotube Arrays Transplanted on Transparent Conducting Oxides – H. W. Jeong and H. Park (School of Energy Engineering, Kyungpook National University)
- 09:55 Break

Solar Water Splitting 2 – 15:55 – 18:00**Co-Chairs: Eric L. Miller and Nicolas Gaillard**

- 15:55 1888 *(Invited)* CdTe Based Photocathodes and Photoanodes for Photoelectrochemical Water Splitting Under Sunlight – T. Minegishi (The University of Tokyo, JST/PRESTO), J. Su (The University of Tokyo), and K. Domen (The University of Tokyo)
- 16:20 1889 *(Invited)* Bismuth-Based Ternary Oxide Thin Film for Solar Water Oxidation – Y. H. Ng (The University of New South Wales)
- 16:45 1890 *(Invited)* Understanding Redox Shuttle Photocatalysis in Z-Scheme Solar Water Splitting Reactors – S. Keene (University of California, Irvine), W. Gaieck (University of California, Irvine), A. Zhang (University of California, Irvine), H. Yaghoubi, J. Liu (University of California, Irvine), R. Bala Chandran (Lawrence Berkeley National Laboratory), C. Xiang (Joint Center for Artificial Photosynthesis, Caltech), A. Z. Weber (Lawrence Berkeley National Laboratory), and S. Ardo (University of California, Irvine)
- 17:10 1891 *(Invited)* Particulate Photocatalyst Systems for Sunlight-Driven Water Splitting – T. Hisatomi and K. Domen (The University of Tokyo)
- 17:35 1892 *(Invited)* Surface Engineering of Metal Oxide Photoanodes for Photoelectrochemical Solar Water Splitting – J. H. Park (Yonsei University)

Ballroom 6ABC, Washington State Convention Center**105 Poster Session – 18:00 – 20:00****Co-Chairs: Heli Wang and Nianqiang Wu**

- 1893 Nano-Bio Assemblies Based on Natural and Artificial Proton Pump for Photocatalytic Hydrogen Production – E. Rozhkova (ANL)
- 1894 Bismuth Vanadate/Zinc Oxide Heterojunction Electrodes for High Solar Water-Splitting Efficiency at Low Bias Potential – K. Kim and J. H. Moon (Sogang University)
- 1895 Exploring Electrocatalytic N₂ under Varying Electrolyte Conditions – A. C. Nielander (Stanford University), J. M. McEnaney (Stanford University Department of Chemical Engineering), and T. F. Jaramillo (Stanford University)
- 1896 Solar Water Splitting Based on Organic Metal Halide Perovskite Solar Cells with Metal Halide Protection and Catalyst – S. Nam and O. Ilhwan (Kumoh National Institute of Technology)
- 1897 Improving Photo-Electrochemical Water Oxidation Response of WO₃ By Mo Doping – S. S. Kalanur and H. Seo (Ajou University)

106**Mechano-Electro-Chemical Coupling in Energy Related Materials and Devices 3****High Temperature Materials / Battery / Electrodeposition / Energy Technology**
Room 613, Washington State Convention Center**Thin Film Growth, Electrocatalysis, & Special Topics – 08:40 – 12:20****Co-Chair: Gery R. Stafford and D. Noel Buckley**

- 08:40 1979 *(Invited)* Residual Stress Evolution during Thin Film Growth: Kinetic Modeling and Monte Carlo Simulations – E. Chason (Brown University School of Engineering)
- 09:20 1980 *In-Situ* Measurements of Stress during Electrodeposition of Copper Nanofilms: Surface and Grain-Boundary Migration of Atoms and the Effect of Chloride Ions – J. A. Murphy (Department of Physics, University of Limerick, Dept. of Chem. Eng., Case Western Reserve University), C. Lenihan, M. Rybalchenko, N. Quill (Department of Physics, University of Limerick), R. P. Lynch, and D. N. Buckley (Department of Physics, University of Limerick, Dept. of Chem. Eng., Case Western Reserve University)
- 09:40 1981 The Effect of Different Additives in the *in-Situ* Stress of Thin Co Films – V. P. Graciano, G. R. Stafford, and U. Bertocci (National Institute of Standards and Technology)
- 10:00 1982 Chemomechanical Effects in Electrocatalysis – H. Tavassol, A. Siwabessy, J. Vuong, C. Bloed, A. Enriquez, and S. Derakhshan (California State University, Long Beach)
- 10:20 Break
- 10:40 1983 *(Invited)* Mechano-Chemical Coupling at Interfaces in Novel Hybrid Materials – J. Weissmüller (Hamburg University of Technology, Helmholtz-Zentrum Geesthacht)
- 11:20 1984 Strain-Reactivity Coupling Coefficients on Gold Thin Film in Electrocatalysis – X. Wu (Hamburg University of Technology, Hamburg), M. Graf (Helmholtz-Zentrum Geesthacht, Hamburg University of Technology), and J. Weissmueller (Helmholtz-Zentrum Geesthacht)
- 11:40 1985 Using Dynamic Stress Analysis to Quantify Adsorbate-Induced Surface Stress – G. R. Stafford and U. Bertocci (National Institute of Standards and Technology)
- 12:00 1986 Sodiased Carbon Fibres for Use in Future Multifunctional Structures – R. Harnden, K. Peuvot, D. Zenkert, and G. Lindbergh (KTH Royal Institute of Technology)

Soft Materials – 14:00 – 16:20**Co-Chair: Ahmet Kusoglu**

- 14:00 1987 *(Invited)* Mechanical Response of Thin Nafion Films to Hydration – B. R. Frieberg, C. M. Stafford, J. R. Graybill, Z. C. Tronstad, and G. R. Stafford (National Institute of Standards and Technology)
- 14:40 1988 Modeling Mechanical Behaviors of a Polymer Electrolyte Membrane in Fuel Cell Dynamic Operations – M. M. M. Hasan (University of Delaware), A. Goshtasbi (University of Michigan), J. Chen (Ford Motor Company), M. H. Santare (University of Delaware), and T. Ersal (University of Michigan)

- 15:00 **1989** Electrochemical Actuation of Hybrid Materials Made from Nanoporous Metals and Electrically Conductive Polymers – B. Roschning (Hamburg University of Technology) and J. Weissmüller (Hamburg University of Technology, Helmholtz-Zentrum Geesthacht)
- 15:20 **1990** Mechanical Basis of Nafion's High-Frequency Inductive Impedance – P. Goyal and C. W. Monroe (Department of Engineering Science, University of Oxford)
- 15:40 **1991** Controlling Ionomer Relaxation to Improve Fuel Cell Durability – Y. S. Kim, D. A. Langlois, A. S. S. Lee, G. M. Purdy, R. Hjelm (Los Alamos National Laboratory), S. D. Yim (Korea Institute of Energy Research (KIER)), C. Lei (Giner Inc), and H. Xu (Giner, Inc.)
- 16:00 **1992** Modeling of Coupled Mechanical and Chemical Degradation of the Ionomer Membrane in Polymer Electrolyte Fuel Cells – M. El Hannach, K. H. Wong, Y. Singh, N. S. Khattra, and E. Kjeang (Simon Fraser University)

K03

Oxidation and Reduction: Exploring Electron Transfer Reactions in Chemistry and Biology

Organic and Biological Electrochemistry / Physical and Analytical Electrochemistry
Room 616, Washington State Convention Center

Session 1 – 08:00 – 11:40

Co-Chairs: Kevin D. Moeller and Takashi Koike

- 08:00 **2061** Electron Transfer Processes Enabling Genotoxicity Sensor Arrays – J. F. Rusling (University of Connecticut Health Center, University of Connecticut)
- 08:40 **2062** Metal-Initiated/Catalyzed Diels-Alder Reaction between Electron Rich Dienes and Dienophiles – S. R. Hussaini (The University of Tulsa), K. Chiba (Tokyo University of Agriculture and Technology), Y. Okada (Tokyo Univ. of Agric. & Technol.), Y. Imada (Tokyo University of Agriculture and Technology), Z. Wang (The University of Tulsa), A. Ozaki (Tokyo University of Agriculture and Technology), A. Pal (The University of Tulsa), Y. Yamaguchi (Tokyo University of Agriculture and Technology), and M. Paramel (The University of Tulsa)
- 09:00 Break
- 09:20 **2063** Characterizing Bioconjugation and Electron Transfer at Coated Nanoparticles By Nano-Impact Electrochemistry – K. Kirk and S. Andreescu (Clarkson University)
- 09:40 **2064** Pd-Catalyzed C–H Functionalization Via Electrochemical Oxidation – T. S. Mei (Shanghai Institute of Organic Chemistry, China)
- 10:00 **2065** Electron Transfer Reactions at Liquid-Liquid Interfaces – H. H. Girault (EPFL, EPFL Valais Wallis), G. Gschwend (EPFL Valais), P. Peljo (Ecole Polytechnique Federale de Lausanne), and A. Olaya (EPFL Valais)
- 10:20 Break
- 10:40 **2066** Photoredox-Mediated Ring-Opening Metathesis Polymerization: Methods, Scope, and Scalability – L. M. M. Pascual, P. Lu, V. K. Kensity, D. C. Lee, J. Goldstone, and A. J. Boydston (University of Washington)

- 11:00 **2067** Photooxygenation of Hydrocarbons with Molecular Oxygen By Electron Transfer – K. Ohkubo (Osaka University)
- 11:20 **2068** Electron Transfer in Supramolecular Chemistry: Redox-Controlled Dimerization in Electroactive Ureidopyridinones – D. K. Smith, M. Cedano, G. M. Darzi, L. A. Clare, K. Vuong, and M. Torres (San Diego State University)

Session 2 – 13:00 – 17:00

Co-Chairs: James F. Rusling and Kazuhiro Chiba

- 13:00 **2069** Translational Electrochemistry – P. Baran (The Scripps Research Institute)
- 13:40 **2070** Principles and Control of Electron Transfer through Conductive Proteins: The Role of Metal Doping and Charged Amino Acids – N. Lebedev (Naval Research Laboratory), I. Griva (George Mason University), A. Blom (QuantumWise, Inc), and L. M. Tender (Naval Research Laboratory)
- 14:00 Break
- 14:20 **2071** Metal- and Oxidant-Free Formal Vinyllic C-H/Aromatic C-H Cross Coupling Based on the Stabilized Cation Pool Method – J. I. Yoshida, R. Hayashi, and A. Shimizu (Kyoto University)
- 14:40 **2072** Miniature Biological Fuel Cells for Sensing Applications – M. Di Lorenzo (University of Bath)
- 15:00 **2073** Electron Transfer Driven Measurement and Quantification of Biological Analytes in Practical Matrices – S. Krishnan (Oklahoma State University)
- 15:20 Break
- 15:40 **2074** Design of Photoredox Systems for Catalytic Fluoroalkylation of Alkenes – T. Koike (Tokyo Institute of Technology)
- 16:00 **2075** Sensitizing the Photocatalytic Ability of Dawson-Wells Polyoxometalates in Solution and Thin Films – T. E. Keyes (Dublin City University)
- 16:20 **2076** Oxidative Activation Mechanism for Glycerol Carbonate Electrosynthesis – H. H. Hoe and D. W. Kirk (University of Toronto)
- 16:40 **2077** Using the Complementarity of Electrochemistry and Photoelectron Transfer to Probe and Develop the Chemistry of Radical Cations – K. D. Moeller, L. Gonzalez, R. Feng (Washington University in St. Louis), and M. D. Graaf (AbbVie)

Ballroom 6ABC, Washington State Convention Center

K03 Poster Session – 18:00 – 20:00

- **2078** Experimental Determination of Number of Electrons in Erythrocytes Electroreduction – I. V. Goroncharovskaya, A. K. Evseev, M. M. Goldin, and S. S. Petrikov (N. Sklifosovsky Research Institute of Emergency Medicine)
- **2079** The Monitoring of Open Circuit Potential of Platinum Electrode in Blood Plasma in Resuscitative Patients – I. V. Goroncharovskaya, A. K. Shabanov, A. K. Evseev, K. V. Ivanova, M. M. Goldin, and S. S. Petrikov (N. Sklifosovsky Research Institute of Emergency Medicine)

Physical and Analytical General Session 4 – 08:00 – 12:00

Co-Chairs: Jeffrey Mark Halpern and Azhar I. Carim

- 08:00 2134 Rotating Ring-Disk Electrode Study of the Electrochemical Dehalogenation of Iodinated Contrast Media – G. V. Korshin (University of Washington), M. Yan, and C. Zhang (Peking University)
- 08:20 2135 Understanding the Surface Corrosion Chemistry Towards Sustainable Semiconductor Photoelectrochemistry – W. Yu, I. Moreno-Hernandez, K. Papadantonakis, B. S. Brunshwig, and N. S. Lewis (California Institute of Technology)
- 08:40 2136 Low-Voltage Reversibly Switchable Wettability through Electrochemical Manipulation of Oxidation State – C. H. Kung, B. Zahiri (Clean Energy Research Centre, UBC), P. K. Sow (BITS Pilani K.K. Birla Goa Campus), and W. Mérida (Clean Energy Research Centre, UBC)
- 09:00 2137 Investigation of the Nano-Heterojunction Electrochemistry Effect By Using in-Situ Spectrum and Electrical Measurement System – Z. J. Hong, Y. J. Wang, L. W. Huang, P. H. Lai (Tamkang University), C. C. Wang, C. H. Chen (CL Technology Corporation), and P. H. Yeh (Tamkang University)
- 09:20 2138 Development of Anodic Stripping Voltammetry in Alkaline Electrolyte and Application for Screening Anion Diffusion Selectivity in Battery Separators – T. N. Lambert, J. Duay, J. E. Ortiz-Santiago, and R. Aidun (Sandia National Laboratories)
- 09:40 Break
- 10:00 2139 Characterization of the Electrochemical Detection of N^G-Hydroxy-L-Arginine – M. L. Arral and J. M. Halpern (University of New Hampshire)
- 10:20 2140 Experimental Validation of the Transmission Line Model Via Impedance Spectroscopy of an Ordered Array on Porous Carbon Electrode – T. Sharma, J. A. Díaz-Real, B. Zahiri, and W. Mérida (Clean Energy Research Centre, UBC)
- 10:40 2141 Developing Wrinkled Surface to Achieve Low-Cost Photoelectrochemical Biosensor and Study the Interplay between LSPR of Nanoparticles and Semiconductive Quantum Dots – S. K. Saha and L. Soleymani (McMaster University)
- 11:00 2142 Optical Direction of Morphological Complexity of Periodic Semiconductor Nanoarchitectures Deposited Via Templateless Photoelectrodeposition – A. I. Carim, N. A. Batara, J. R. Thompson, H. A. Atwater, and N. S. Lewis (California Institute of Technology)
- 11:20 2143 Methane Pulse and in-Situ Raman Study of Impregnated Ni/CGO As Anodes of SOFC – M. Ouyang, P. Boldrin (Imperial College London), R. C. Maher (Imperial College), and N. P. Brandon (Quantitative Imaging Division, IQM Elements)

- 11:40 2144 Identification and Characterization of Metal-Oxide Powders with Energy-Resolved Density of Electron Traps Measured By Reversed Double-Beam Photoacoustic Spectroscopy – B. Ohtani (Institute for Catalysis, Hokkaido University, Graduate School of Environmental Science, Hokkaido Univ), A. Nitta (Graduate School of Environmental Science, Hokkaido Univ.), M. Takase (Graduate School of Engineering, Muroan Institute of Tech), and M. Takashima (Graduate School of Environmental Science, Hokkaido Univ., Institute for Catalysis, Hokkaido University)

Physical and Analytical General Session 5 – 14:00 – 17:00

Co-Chairs: Arnaud Etcheberry and Jonathan Michael Witt

- 14:00 2145 Reducing the Charge Voltage of a Hybrid Na-Air Battery Using a TiO₂ Nanorods-Based Photoelectrode – S. M. Hwang, J. Han (Ulsan National Institute of Science and Technology), and Y. Kim (Ulsan National Institute of Science and Technology, Energy Materials and Devices Lab, 4TOONE Corporation)
- 14:20 2146 Photorechargeable Lithium-Ion Battery Electrode Based on Nanocrystals of Anatase TiO₂ Combining Energy Conversion and Storage – G. Bouteau, I. Sagaidak, C. Andriamiamanana (Laboratoire de Réactivité et Chimie des Solides, UMR 7314, RS2E), A. Nguyen Van Nhien (LG2A), and F. Sauvage (Laboratoire de Réactivité et Chimie des Solides, UMR 7314, RS2E)
- 14:40 2147 Pyridine Functionalized Pt/C: Ligand-Mediated Bifunctional Catalyst for the Enhanced Oxygen Reduction and Methanol Oxidation Tolerance in Fuel Cells – L. Lu (Department of Chemistry, Zhejiang University)
- 15:00 2148 Differential Electrochemical Mass Spectrometry Coupled with Linear and Non-Linear Electrochemical Impedance Spectroscopy of Gadolinia-Doped Ceria: Deconvolution of CO₂ and H₂O Co-Electrolysis – J. M. Witt, E. M. Stuve, and S. B. Adler (University of Washington)
- 15:20 2149 Pulsed Electrodeposition of Gas Diffusion Electrocatalysts for CO₂ Reduction to Value-Added Products – R. Radhakrishnan (Faraday Technology), B. Skinn (Faraday Technology, Inc.), S. Sen (Massachusetts Institute of Technology), M. Leonard (MIT), T. D. Hall, S. Snyder (Faraday Technology, Inc.), F. R. Brushett (Joint Center for Energy Storage Research), and E. J. Taylor (Faraday Technology, Inc.)
- 15:40 2150 Spectroscopic Evidence of Size-Dependent Buffering of Interfacial pH By Cation Hydrolysis during CO₂ Electroreduction – O. Ayemoba and A. Cuesta (University Of Aberdeen)
- 16:00 2151 The Evaluation of the Perturbations Induced By Ionic Bombardment on Surfaces: A Challenge for Interfacial Electrochemistry – D. Aureau, M. Bouttemy, M. Frégnaux, J. Vigneron, A. Etcheberry, and A. M. Gonçalves (Institut Lavoisier de Versailles UMR8180 CNRS-UVSQ)
- 16:20 2152 Electrowetting of Liquid Drops Revisited By XPS – P. Aydogan-Gokturk, B. Ulgut, and S. Suzer (Bilkent University)

16:40 **2153** Understanding the Electrochemical Behavior of Di-Sodium Carboxymethyl Trithiocarbonate (Orfom® D8) Depressant on Copper Metal and Chalcopyrite Surfaces – S. Timbillah, C. Young, and A. Das (Montana Tech of the University of Montana)

Ballroom 6ABC, Washington State Convention Center

L01 Poster Session – 18:00 – 20:00

Co-Chair: Alice H. Suroviec

- **2154** Photoelectrochemical Methanol Oxidation on TiN Nanoparticles Supported on TiO₂ – O. A. Baturina (U.S. Naval Research Laboratory), A. Epshteyn, and B. Simpkins (Naval Research Laboratory)
- **2155** The Nature of Hydrated Protons on Platinum Surface – Y. Kim, C. Noh, Y. Jung, and H. Kang (Seoul National University)
- **2156** Palladium-Based Alloy Nanoparticles for Direct Liquid Fuel Cells – J. Y. Kim (Korea Institute of Science and Technology, Korea University), Y. J. Ko, W. S. Lee (Korea Institute of Science and Technology), and T. Y. Seong (Korea University)
- **2157** Semi-Integral Electroanalysis of the Electrochemistry of Tris(2,2'-bipyridine) Complexes – D. M. Cabral and D. R. MacFarlane (Monash University)
- **2158** Design of Combined Scanning Ion Conductance and Atomic Force Microscope for Investigation of Lithium Iron Phosphate – T. Enright (McGill University), Y. Miyahara (McGill University), A. Mascaro (McGill University), C. Aiken (Dalhousie University), and P. Grutter (McGill University)
- **2159** Adsorption and Selective Electrochemical Analysis of Epinephrine Using Clay-Modified Glassy Carbon Electrode – A. O. Agyeman (Clayton State University)
- **2160** Identification of Specific Electrical Phenomena Driven By a Water Droplet Motion on Electrolyte-Insulator-Semiconductor Structure – Y. S. Kim (Seoul National University)

L02

Electrocatalysis 9: Symposium in Honor of Radoslav Adzic

Physical and Analytical Electrochemistry / Electrodeposition / Energy Technology
Room 603, Washington State Convention Center

General Electrocatalysis 2 – 08:00 – 12:00

Co-Chairs: Shigang Sun and Jia X. Wang

- 08:00 **2195** (*Keynote*) Modification of the Electrocatalyst Surface Composition By the Electrode Potential and the Substantial Resulting Effects on the Cell Characteristic – S. Gottesfeld (Fuel Cell Consulting, Ltd and U Delaware Chem Eng)
- 08:40 **2196** (*Invited*) Surface Sites Probing and Electrocatalytic Property of Atomic Sub-Monolayer and Multilayer on Tetrahedral Nanocrystals – N. Tian (Department of Chemistry, Xiamen University), Y. F. Lin (Department of Chemistry, Xiamen University), and S. G. Sun (Department of Chemistry, Xiamen University)

- 09:00 **2197** (*Invited*) Facets of Nanocrystal: A Knob to Tune Electrocatalytic Activity – J. Park (Georgia Institute of Technology), Z. Feng (Oregon State University), Y. Shao-Horn (Massachusetts Institute of Technology), and S. W. Lee (Georgia Institute of Technology)
- 09:20 **2198** (*Invited*) Tracking Ionic Transport and Electrochemical Reactions in Low-Dimensional Nanomaterials for Energy Storage – Y. Zhu (Dep. Cond. Matter Phys. Mater. Sci., Brookhaven Nat. Lab.)
- Break
- 09:40 **2199** (*Invited*) The Interplay of Oxygen Electrochemistry, Electrocatalysis, and Anionic Redox Processes in the Development of Electrochemical Energy Storage Technology for Vehicular Applications – P. W. Faguy (US Department of Energy)
- 10:00 **2200** (*Invited*) Impacts of Anions on Oxygen Reduction Reaction Kinetics on Platinum and Palladium Surfaces – M. Shao and S. Zhu (The Hong Kong University of Science and Technology)
- 10:20 **2201** The Impact of Adsorbates on Metal Deposition through the Curvature Enhanced Accelerator Coverage Mechanism – D. Josell and T. P. Moffat (NIST)
- 10:40 **2202** Adsorption of Methane at Platinum Electrodes Under Potentiodynamic Control at Ambient Conditions, and Characterization of Adsorbed Intermediates Via ATR-FTIR Spectroscopy – M. J. Boyd and T. F. Jaramillo (Stanford University)
- 11:00 **2203** From Salt to Germanene: A Cookbook for Electrochemical Formation of 2D Materials (Inspired by R. Adzic) – J. Drnec (European Synchrotron Radiation Facility), J. L. Stickney (University of Georgia), and D. A. Harrington (University of Victoria)
- 11:20 **2204** Hybrid Carbon Nanostructures As Efficient Electrocatalysts – S. Ozden (Los Alamos National Lab), U. Martinez (Los Alamos National Laboratory), and A. D. Mohite (Los Alamos National Lab)

General Electrocatalysis 3 – 14:00 – 17:20

Co-Chairs: Plamen Atanassov and Kotaro Sasaki

- 14:00 **2205** (*Invited*) Analysis of the Oxygen Evolution Reaction on M-IrO₂ (M=Ni, Co) Surfaces – P. B. Balbuena (Department of Chemical Engineering, Texas A&M University), L. E. Camacho-Forero (Texas A&M University), F. Godinez-Salomon, and C. Rhodes (Texas State University)
- 14:20 **2206** (*Invited*) Structure and Reactivity of Hybrid Functional Materials in Electrocatalysis – P. J. Kulesza (University of Warsaw)
- 14:40 **2207** (*Invited*) Oxygen Reduction on Polycrystalline Gold in Alkaline Electrolytes: Experimental and Theoretical Aspects – J. R. Strobl, N. S. Georgescu, B. Pozniak, I. Treufeld, and D. Scherson (Case Western Reserve University)
- Break
- 15:00 **2208** (*Invited*) Solar Fuel Production for a Sustainable Energy: Water Splitting to Hydrogen and CO₂ to Fuel – D. Chu (U.S. Army Research Laboratory) and J. Li (Army Research Laboratory)

Bioelectrocatalysis – 08:00 – 12:00

Co-Chairs: Scott Calabrese Barton and Shelley D. Minteer

- 08:00 **2238** *(Keynote)* Synthetic Protection Matrices for Integration of Redox Proteins in Fuel Cells and Photovoltaic Cells – N. Plumeré (Ruhr-Universität Bochum)
- 08:40 **2239** Understanding the Mechanisms of Photosynthetic Electron Transport for Energy Conversion Applications – R. P. Ramasamy (School of Chemical, Materials and Biomedical Engineering)
- 09:00 **2240** A Hybrid Multi-Catalyst Motif for Enhanced Electro-Oxidation of Glycerol – F. C. Macazo, D. P. Hickey, S. Abdellaoui, M. S. Sigman, and S. D. Minteer (University of Utah)
- 09:20 **2241** Multi-Modal Catalytic Cascades on Carbonaceous Scaffolds – M. S. Chavez, J. Monclova (University of New Mexico), D. P. Hickey, S. Abdellaoui (University of Utah), I. Gonzales (University of New Mexico), S. Minteer (University of Utah), and P. Atanassov (University of New Mexico)
- 09:40 Break
- 10:00 **2242** Novel Quantification of Cascade Kinetics of Electrostatic Channeling – Y. Liu (Michigan State University), I. Matanovic, P. Atanassov (University of New Mexico), and S. Calabrese Barton (Michigan State University)
- 10:20 **2243** Multiplexed 3D Paper Platform for Electrochemical and Enzymatic Catalytic Conversions in a Complex Cascade System – N. I. Andersen, K. Artyushkova, I. Gonzales, and P. Atanassov (University of New Mexico)
- 10:40 **2244** Surface Recognition and Electron Transfer in Electroactive Bacterial Biofilms: Principal Component Analysis – N. Lebedev (Naval Research Laboratory), M. Yates (Naval Research Laboratory, CBMSE), and L. M. Tender (Naval Research Laboratory)
- 11:00 **2245** Enhancement of Electrochemical Performance of Bilirubin Oxidase Modified Gas Diffusion Biocathode By Porphyrin Precursor – M. Arugula, E. Pinchon, K. Pant, and S. Singhal (CFD Research Corporation)
- 11:20 **2246** Precipitated and Chemically-Crosslinked Enzymes over Polyaniline Nanofibers for High Performance Biosensors & Biofuel Cells – T. Garcia-Perez (Washington State University), J. H. Kim, R. E. Kim, Y. Wee, J. Kim (Korea University), and S. Ha (Washington State University)
- 11:40 **2247** Stainless Steel-Based Bioanodes for Applications in Bioelectrochemical Systems – J. M. Fontmorin (School of Engineering, Newcastle University), J. Hou (School of Engineering, Newcastle University, Beijing University of Technology), I. Head (School of Natural & Env. Science, Newcastle University), K. Scott (Newcastle University), and E. Yu (School of Engineering, Newcastle University)

- 15:40 **2209** *(Invited)* Nickel-Based Anode Electrocatalysts for Alkaline Exchange Membrane Fuel Cells – P. Atanassov and A. Serov (University of New Mexico)
- 16:00 **2210** *(Invited)* Recent Progress in the Understanding of the Electrocatalysis of the CO-Tolerant Hydrogen Oxidation Reaction in Polymer Electrolyte Fuel Cells – D. A. Tryk (Fuel Cell Nanomaterials Center, University of Yamanashi), G. Shi (Clean Energy Research Center, University of Yamanashi), H. Yano (Fuel Cell Nanomaterials Center, University of Yamanashi), J. Inukai (University of Yamanashi), H. Uchida, A. Iiyama (Fuel Cell Nanomaterials Center, University of Yamanashi), M. Matsumoto, H. Tanida, M. Arao, and H. Imai (Device Analysis Department, NISSAN ARC, Ltd.)
- 16:20 **2211** Transition-Metal Oxide Electrocatalysts with Well-Defined Surface and Sub-Surface Layers – D. Y. Kuo, H. Paik, D. G. Schlom, and J. Suntivich (Cornell University)
- 16:40 **2212** An Investigation of the Adverse Effect of TiO₂ on Pt-Catalyst for the Oxygen Reduction Reaction – T. Miller (Northeastern University), S. Mukerjee, and Q. Jia (Chemistry and Chemical Biology, Northeastern University)
- 17:00 **2213** Nitrogen Doping on Carbon Paper Electrodes – A. K. Singh, N. Yasri, K. Karan, and E. P. L. Roberts (University of Calgary)

Energy Technology Division Supramaniam Srinivasan Young Investigator

Award Address – 17:20 – 18:00

Co-Chair: Vojislav Stamenkovic

- 17:20 **2214** *(Energy Technology Division Supramaniam Srinivasan Young Investigator Award Address)* Enhanced Oxygen Electrocatalysis By Means of Electronic and Geometric Effects – M. Escudero-Escribano (University of Copenhagen)

Ballroom 6ABC, Washington State Convention Center

L02 Poster Session – 18:00 – 20:00

- **2215** Electrocatalytic Property of Pt Atomic Layers on Pd Nanocrystals for Ethanol Oxidation – Y. F. Lin (Department of Chemistry, Xiamen University), N. Tian, and S. G. Sun (Department of Chemistry, Xiamen University)
- **2216** Pd/Fe₃O₄ Nanocatalysts for Highly Effective and Simultaneous Removal of Humic Acids and Cr(VI) By Electro-Fenton with H₂O₂ in-Situ Electro-Generated on the Catalyst Surface – B. Huang, Q. Guo (Hunan University), and C. Lei (Changsha University of Science & Technology)
- **2217** The Structural Effect of Pd-H Catalysts on Synthesizing Temperature for Direct Alkaline Formate Fuel Cell – S. Hong, H. Hwang (Electrochemical Reaction & Technology Laboratory, GIST), J. K. Lee (Ertl Center for Electrochemistry & Catalysis, GIST), and J. Lee (Electrochemical Reaction & Technology Laboratory, GIST, Ertl Center for Electrochemistry & Catalysis, GIST)

Enzymatic Fuel Cells – 14:00 – 16:40**Co-Chairs: Mary Arugula and Nicolas Mano**

- 14:00 2248 *(Keynote)* Tuning the Properties of Biological Catalysts for Biofuel Cells Applications: From Site-Directed Mutagenesis to the Design of Macroscopic Redox Matrices – C. Léger, V. Fourmond, and S. Dementin (CNRS / AMU)
- 14:40 2249 On-Chip Enzymatic Microbiofuel Cell-Powered Integrated Circuits – N. Mano (CRPP-CNRS)
- 15:00 2250 Bioelectrode Engineering - Control of Catalytic Film Thickness for Enzymatic Fuel Cells – H. Li, D. Buesen, R. Williams, J. Henig, S. Stapf, M. Winkler, T. Happe, and N. Plumeré (Ruhr-Universität Bochum)
- 15:20 2251 Hybrid Non-Enzymatic and Enzymatic Cascade Bioanode for Glycerol/O₂ Biofuel Cell Applications – M. Arugula, E. Pinchon, U. Lindstrom, P. Juzang, K. Pant (CFD Research Corporation), S. D. Minteer (University of Utah), and S. Singhal (CFD Research Corporation)
- 15:40 Break
- 16:00 2252 *(Keynote)* Covalent and Non-Covalent Functionalization of Carbon Nanostructures for Designing Biological Fuel Cells – S. Krishnan (Oklahoma State University)

*Ballroom 6ABC, Washington State Convention Center***L03 Poster Session – 18:00 – 20:00****Co-Chair: Shelley D. Minteer**

- 2253 Sputtering of Nickel-Palladium Bimetallic Anode Catalysts for Direct Urea/Urine Fuel Cell (DUFC) Application – J. Yoon, D. Lee, E. Lee (Auburn University), S. P. Woo (Yonsei University), Y. S. Yoon (Gachon University), Y. Wang, and D. J. Kim (Auburn University)

L05**Oxygen Reduction Reactions**Physical and Analytical Electrochemistry / Energy Technology
*Room 602, Washington State Convention Center***Oxygen Reduction Reactions 8 – 08:00 – 10:00****Co-Chairs: Sara Cavaliere and Junji Nakamura**

- 08:00 2330 *(Invited)* Understanding ORR Reaction on Nitrogen Doped Carbon Materials: Insight from Experiments and Calculations – A. Ferre-Vilaplana (Universidad Politécnica de Valencia), V. Briega-Martos, J. Feliu, and E. Herrero (Universidad de Alicante)
- 08:30 2331 *(Invited)* Influencing the Catalytic Activity for Oxygen Reduction and Evolution in Aqueous and Non-Aqueous Electrolytes: Support and Cations – P. Reinsberg (Universität Bonn), L. Zan, H. M. A. Amin (University of Bonn), E. Mostafa (Mansoura University), and H. Baltruschat (University of Bonn)
- 09:00 2332 *(Invited)* In Situ X-Ray Absorption Spectroscopy Characterization of Iron-Carbon-Nitrogen Oxygen Reduction Reaction Catalysts during Pyrolysis – D. J. Myers, A. J. Kropf, and D. Yang (Argonne National Laboratory)
- 09:30 Break

Oxygen Reduction Reactions 9 – 10:00 – 12:20**Co-Chairs: Vojislav Stamenkovic and Serge Cosnier**

- 10:00 2333 *(Invited)* Enzymatic Reduction of Oxygen for the Development of Biofuel Cells and Hybrid Fuel Cells – S. Cosnier (Grenoble Alpes University)
- 10:30 2334 *(Invited)* Interplay between Physicochemical Features and Electrochemical Performance in the ORR of “Platinum-Free” Electrocatalysts Based on Hierarchical Graphene Supports – V. Di Noto (Dept. Industrial Engineering, University of Padova, Dept. Mat. Science & Engineering, Univ. Carlos III Madrid), E. Negro (Dept. of Industrial Engineering, University of Padova, Centro Studi “Giorgio Levi Cases”), A. Nale (Dept. of Industrial Engineering, University of Padova), K. Vezzù (Dept. of Industrial Engineering, University of Padova, INSTM), Y. Bang, F. Bertasi (Dept. of Industrial Engineering, University of Padova), G. Pagot (Dept. of Industrial Engineering, University of Padova, Centro Studi “Giorgio Levi Cases”), G. Pace (CNR-ICMATE), S. Polizzi (Department of Molecular Sciences - University of Venice), and M. Prato (IIT, Materials Characterization Facility)
- 11:00 2335 Rational Design of Metal-Organic Frameworks/Gels As Efficient Catalysts for Oxygen Reduction Reaction – H. Wang (Beijing University of Chemical Technology)
- 11:20 2336 Metal-Organic Framework-Derived Iron and Nitrogen Co-Doped Composites As Precious Catalysts for Oxygen Reduction Reaction – K. C. Wang, H. C. Huang, and C. H. Wang (National Taiwan University of Science and Technology)
- 11:40 2337 Electro-Reduction of Nitrogen on Molybdenum Carbides: A Density Functional Theory Study – I. Matanovic (Center for Micro-Engineered Materials, University of New Mexico) and F. H. Garzon (University of New Mexico)
- 12:00 2338 Non-Destructive Chemical State Mapping Using Laboratory XANES and EXAFS – J. Gelb, S. Lewis, S. Seshadri, J. Kirz, and W. Yun (Sigray, Inc.)

Oxygen Reduction Reactions 10 – 14:00 – 16:00**Co-Chairs: Galina A. Tsirlina and Beata Dembinska**

- 14:00 2339 *(Invited)* Magneto-electrocatalysis of Oxygen Reduction Reaction (ORR) By Lanthanide Triflates in Acetonitrile – K. L. Knoche (Iowa State University), D. Parr IV, and J. Leddy (University of Iowa)
- 14:30 2340 *(Invited)* Pt Thin Films on Nanofibres: ORR Electrocatalysts with High Performance and Stability – S. Cavaliere, G. Ercolano, F. Farina, D. J. Jones, and J. Rozière (CNRS - ICGM - AIME - University of Montpellier)
- 15:00 2341 Reduced-Graphene-Oxide with Transition Metal Hexacyanometalates As Active Support for Traces of Platinum Catalyst at Low Loading during Oxygen Electroreduction – B. Zakrzewska, K. Miecznikowski, B. Dembinska, L. Stobinski, S. Zoladek, I. A. Rutkowska, A. Zlotorowicz, J. Zak (University of Warsaw), E. Negro (Dept. of Industrial Engineering, University of Padova), P. J. Kulesza (University of Warsaw), and V. Di Noto (Dept. Industrial Engineering, University of Padova)

- 15:20 **2342** High-Performance PGM-Free and Fe-Free Catalysts for Oxygen Reduction in Acidic Media – X. Wang (University at Buffalo), D. A. Cullen (Oak Ridge National Laboratory), Y. T. Pan, J. S. Spendelow (Los Alamos National Laboratory), K. L. More (Oak Ridge National Laboratory), and G. Wu (University at Buffalo, the State University of New York)
- 15:40 Break

Oxygen Reduction Reactions 11 – 16:00 – 18:20

Co-Chairs: Minhua Shao and Piotr Zelenay

- 16:00 **2343** Heterogeneous Iron-Containing Carbon Gels As Catalysts for Oxygen and Carbon Dioxide Electroreductions – Rotating Ring-Disk Voltammetric Studies – B. Dembinska (University of Warsaw), W. Kiciński (Military University of Technology in Warsaw), and P. J. Kulesza (University of Warsaw)
- 16:20 **2344** Catalytic Activity of Transition Metal Nitrides for Oxygen Reduction Reaction – H. Abroshan (Department of Chemical Engineering, Stanford University), P. Bothra, A. Kulkarni, J. Nørskov (Stanford University), and S. Siahrostami (Department of Chemical Engineering, Stanford University)
- 16:40 **2345** Oxide-Stabilized Nanoporous Ni-Pt for Enhanced Durability in ORR Catalysis – A. Carter, T. D. Pounds, B. Gaskey, and J. Erlebacher (Johns Hopkins University)
- 17:00 **2346** Active Non-Precious Metal Based Nitride Catalysts for the Oxygen Reduction Reaction – L. A. King (University of Wyoming), M. Kreider (Stanford University Department of Chemical Engineering), S. Siahrostami (Department of Chemical Engineering, Stanford University), S. Back, and T. F. Jaramillo (Stanford University)
- 17:20 **2347** Towards Fully Synthetic Transition Metal-Nitrogen-Carbon Electrocatalysts for Oxygen Reduction Reaction – R. R. Gokhale, S. Thapa (University of New Mexico), K. Artyushkova (Center for Micro-Engineered Materials), R. Giri, and P. Atanassov (University of New Mexico)
- 17:40 **2348** Nanoscale Engineering of Efficient Oxygen Reduction Electrocatalysts By Tailoring the Local Chemical Environment of Pt Surface Sites – S. Linic (University of Michigan)
- 18:00 **2349** Melamine-Sponge-Derived Fe-N/C Electrocatalyst with Tunable Pore Structure and Nitrogen Chemical State for Exceptional Oxygen Reduction Reaction – D. Xia and L. Gan (Graduate School at Shenzhen, Tsinghua University)

Ballroom 6ABC, Washington State Convention Center

L05 Poster Session – 18:00 – 20:00

Co-Chairs: Iwona Agnieszka Rutkowska and Pawel J. Kulesza

- **2350** Highly Efficient Nanostructured Hybrid Catalysts for Oxygen Reduction Reaction in Polymer Electrolyte Membrane Fuel Cells – B. Yarar Kaplan, N. Haghmoradi, E. Biçer (Sabanci University), C. Merino (Grupo Antolin Ingeniería SA), and S. Alkan Gürsel (Sabanci University)

- **2351** Durability of Pt/C with Different Nitrogen for Contents for Oxygen Reduction Reaction in PEMFC – K. Ham (ERTL, Gwangju Institute of Science and Technology (GIST)), J. K. Lee (Ertl Center for Electrochemistry and Catalysis, GIST), and J. Lee (Ertl Center for Electrochemistry & Catalysis, GIST)
- **2352** Introducing a New Functionality on Pt Alloy Nanocrystals for Boosted Electrochemical Activities in Oxygen Reduction Reaction – J. M. Yoo (Seoul National University (SNU), Institute for Basic Science (IBS)), D. Y. Chung (Argonne National Laboratory), C. Y. Ahn, and Y. E. Sung (Seoul National University (SNU), Institute for Basic Science (IBS))
- **2353** Li-Birnessite Manganese Oxide Coated on Graphene Aerogel for High-Efficient Electrocatalyst Towards Oxygen Reduction Reaction – S. Kosasang, M. Sawangphruk, and N. Ma (Vidyasirimedhi Institute of Science and Technology)

M01 Sensors, Actuators, and Microsystems General Session

Sensor

Room 303, Washington State Convention Center

Biosensors 1: Fundamentals – 08:00 – 12:30

Co-Chairs: Leyla Soleymani, Milad Navaei, Mekki Bayachou, and Daniel A. Heller

- 08:00 **2424** Highly Sensitive Acetylcholinesterase Biosensor Based on Shaped Controlled ZnO Nanostructure for Paraoxon Pesticide Detection – A. Fallatah, N. Kuperus, M. Almomtan, and S. Padalkar (Iowa State University)
- 08:20 **2425** A Sandwiched Immunosensor for Highly Selective and Sensitive Detection of Alpha-Fetoprotein By Using CdTe@SiO₂/GO Electrochemiluminescence Probes – D. Pan and Y. Shen (Southeast University)
- 08:40 **2426** Impact of Bio-Recognition Element Density and Other Factors Impacting Impedance Sensor Performance – M. Brothers (711th Human Performance Wing, AFRL, UES Inc.), A. Nicolini (Materials and Manufacturing Directorate, AFRL), J. Chavez, J. Martin, C. Grigsby (711th Human Performance Wing, AFRL), L. Drummy (Materials and Manufacturing Directorate, AFRL), R. Naik, and S. Kim (711th Human Performance Wing, AFRL)
- 09:00 **2427** A Versatile Redox Responsive Nanoferrogels Based Sensor for Metabolites Analytics – S. Mugo, W. Lu, and N. Funk (MacEwan University)
- 09:20 **2428** Electrochemical Determination of Tyrosine and Tryptophan Using Ultraviolet Irradiated Tungsten Trioxide Nanoparticles – C. Sekar and A. A. C. (Alagappa University)
- 09:40 **2429** (Invited) Engineering the Bio-Interface at the Nanoscale for Diagnostics and Therapeutics Applications – T. Fatanat Didar (McMaster University)
- 10:30 **2430** Non-Enzyme Urea Sensing with Ag Covered ZnO with Different Morphologies on Carbon Papers – J. Yoon, D. Lee, E. Lee (Auburn University), S. P. Woo (Yonsei University), Y. S. Yoon (Gachon University), Y. Wang, and D. J. Kim (Auburn University)

- 10:50 **2431** Silicon Nanowire Based Sensors By Using Nickel-Oxide Membrane for Sarcosine Sensing – A. Roy and S. Maikap (Chang Gung University, Taiwan)
- 11:10 **2432** Competitive Sensing Mode for Electrochemical Detection of Proteins – A. Gosai and P. Shrotriya (Iowa State University)
- 11:30 **2433** Design and Development of Electrochemical Analyzer for Detection of Δ^9 -Tetrahydrocannabinol (THC) – A. Karimi and B. Dweik (Giner Labs)
- 11:50 **2434** Palladium Deposited on Multi-Walled Carbon Nanotubes Composite Modified Glass Carbon Electrode As Electrochemical Acetaminophen Sensing Platform – Y. Wu (Nanjing University of Science and Technology), W. Lei, Q. Hao, and C. Li (Nanjing University of Science and Technology)
- 12:10 **2435** Porphyrin-Based Nanomaterials: Enhanced Electrochemiluminescence and the Application of Bioassay – D. Shan, G. Y. Zhang, W. R. Cai, and W. L. Xin (Nanjing University of Science and Technology)

Vittorio de Nora Award Address – 14:00 – 14:40
Co-Chair: Larry A. Nagahara

- 14:00 Introductory Remarks
- 14:05 **2436** (Vittorio de Nora Award Address) New Tools for Brain Research – H. Deligianni (IBM, Thomas J. Watson Research Center)

Biosensors 2: Medical Applications – 14:40 – 18:00
Co-Chairs: Larry A. Nagahara and Nick Wu

- 14:40 **2437** Electrochemical Assessment of Nitric Oxide Spatial Distribution at Single Organ Level in Live Zebrafish Embryos – E. Dumitrescu, K. Wallace, and S. Andreescu (Clarkson University)
- 15:00 **2438** In Sickness and in Health – S. Chandra, J. Chapman, D. Cozzolino, A. Power (CQUniversity), and J. Roberts (CQUniversity)
- 15:20 **2439** A Wearable Electrochemical Impedance Spectroscopy Device for Detection of Glucose in Sweat Using Zinc Oxide Based Flexible Biosensors – D. Sankhala (The University of Texas at Dallas), S. Muthukumar (EnLiSense LLC), and S. Prasad (University of Texas at Dallas)
- 15:40 **2440** Non-Faradaic Affinity Based Biosensor for Enhanced Detection of Biomarkers in Sweat Using Room Temperature Ionic Liquids – B. Jagannath (The University of Texas at Dallas), S. Muthukumar (Enlisen LLC), and S. Prasad (University of Texas at Dallas)
- 16:00 **2441** Comparison of Ex-Situ and In-Situ Nano Plasmonic Platforms for Capture and Detection of Exosomes – R. Duraichelvan, B. Srinivas, S. Badilescu (Concordia University), A. Ghosh (Atlantic Cancer Research Institute), and M. Packirisamy (Concordia University)
- 16:40 **2443** Wearable Tattoo-Based Iontophoretic Biosensing System for Noninvasive Metabolite Monitoring Application – J. Kim (UC San Diego) and J. Wang (UCSD)
- 17:00 **2444** A Cell-Imprinted Polymer Capacitive Biosensor for the Detection of *Escherichia coli* – W. Lu and S. Mugo (MacEwan University)

- 17:20 **2445** Comparison of Pathogens Capture By Different Bio-Receptors Immobilized Biomolecular Filter in a Large Volume of Liquid – S. Du (Materials Research & Education Center, Auburn University), I. H. Chen (Material Research & Education Center, Auburn University), Y. Liu (Materials Research & Education Center, Auburn University), J. Xi, X. Lu (Material Research & Education Center, Auburn University), S. Horikawa (Auburn University), T. S. Huang (Poultry Science, Auburn University), S. J. Suh (Department of Biological Sciences, Auburn University), and B. A. Chin (Material Research & Education Center, Auburn University)
- 17:40 **2446** An Advanced Magnetoelastic (ME) Sensing of Salmonella By the Improvement of Pathogen Recovery Rate Using Tween20 Modified Swabs – Y. Liu, S. Du (Materials Research & Education Center, Auburn University), S. Horikawa (Auburn University), I. H. Chen, J. Xi, X. Lu (Material Research & Education Center, Auburn University), T. S. Huang (Auburn University), and B. A. Chin (Material Research & Education Center, Auburn University)

Ballroom 6ABC, Washington State Convention Center

M01 Poster Session – 18:00 – 20:00
Co-Chairs: Larry A. Nagahara, Jin-Woo Choi, and Ajit Khosla

- **2447** Vitamin B₆ Cofactor Conjugated hPEI-AgNCs for Fluorescent Sensing of Metal Ions and its Application in Cells Imaging – S. Bothra and S. K. Sahoo (S.V. National Institution of Technology)
- **2448** Wholistic Electrochemical Biosensor for the Combinatorial Detection of Alcohol and Glucose in Perspired Sweat – A. Bhide (University of Texas at Dallas), S. Muthukumar (Enlisen LLC), and S. Prasad (University of Texas at Dallas)
- **2449** Sensitivity to Acetone By Epsilon-Phase Tungsten Trioxide Films Produced By Reactive Spray Deposition Technology – R. J. Ouimet, T. A. Ebaugh, L. J. Bonville, and R. Maric (University of Connecticut, Center for Clean Energy Engineering)
- **2450** Friction Property of Gel Surface Modified By Laser Processing – M. Wada (National Institute of Technology, Tsuruoka College), T. Kameyama (Yokohama National University), K. Yoshida, A. Khosla, M. Kawakami, and H. Furukawa (Yamagata University)
- **2451** Electric Field Induced Melting: Effect of Non-Specifically Absorbed DNA – R. M. West and W. Hetrick (University of San Francisco)
- **2452** 3D Printed Shape Memory Hydrogels for Soft Robotics – M. N. I. Shiblee, K. Ahmed, A. Khosla, and H. Furukawa (Yamagata University)

- **2453** Temperature and Spallation Sensors Based on Oxide and Oxide/Silicide Composites for High-Temperature System Monitoring – K. Sabolsky, G. A. Yakoboylu (West Virginia University), K. Sivaneri Varadharajan Idhiam, B. Buzzo (WVU Department of Mechanical and Aerospace Engineering), M. Comparetto, D. S. Reynolds (WVU - Computer Science and Electrical Engineering), K. Sierros (WVU Department of Mechanical and Aerospace Engineering), E. M. Sabolsky (West Virginia University), J. Bogan, and M. Raughley (HarbisonWalker International)
- **2454** Nano Gold- Carbon Nanotube Modified Sensor for the Determination of Diabetes Risk Biomarkers, 8-Hydroxydeoxyguanosine and 8-Hydroxyguanine – R. N. Goyal (IIT Roorkee)
- **2455** Gas Sensing Characteristics of ZnO Thin Films Exposed to Ethanol – C. Y. Lin (National Chiao Tung University), J. H. Wang (National Taiwan Normal University), I. K. Cheng, and F. M. Pan (National Chiao Tung University)
- **2456** Easy Monitoring of L-Lactic Acid in Wine Samples Using Disposable Electrochemical Enzymatic Sensors – P. Fanjul Bolado, M. M. Pereira Silva Neves, M. B. González García, and D. Hernández Santos (DROPSSENS)
- **2457** A Comparative Study on Gas Sensing Performance of Photo-Reduced GO with TiO₂ and ZnO – E. Lee, D. Lee, J. Yoon (Auburn University), Y. S. Yoon (Gachon University), B. C. Prorok (Auburn University), and D. J. Kim (Materials Research and Education Center)
- **2458** NiO Nanostructured Catalysts By AC EPD for Non-Enzymatic Urea Sensors – D. Lee, J. Yoon, E. Lee (Auburn University), S. P. Woo (Yonsei University), Y. S. Yoon (Gachon University), and D. J. Kim (Auburn University)
- **2459** Characterization of Defect-Rich Poly-SnO₂ Nanofiber Material for Electrical Transport Mechanism Application – C. Y. Lai (National Chiao Tung University), L. W. Huang, P. H. Lai, Y. J. Wang, Z. J. Hong (Tamkang University), W. W. Wu (National Chiao Tung University), and P. H. Yeh (Tamkang University)
- **2460** Conductive Shape Memory Gels for Sensing Application – K. Ahmed, M. N. I. Shiblee, A. Khosla, and H. Furukawa (Yamagata University)
- 09:10 **2616** Ultra-Low Density Metallic Foams Synthesized By Cathodic Plasma Electrolysis – R. Botrel (Commissariat à l'Énergie Atomique)
- 09:30 Break
- 09:50 **2617** Layered and Scrolled Nanocomposites with Aligned Semi-Infinite Graphene Inclusions at the Platelet Limit – P. Liu (MIT) and M. S. Strano (Massachusetts Institute of Technology)
- 10:10 **2618** Light-Driven Small Molecule Oxidation on Pd-Au Bimetallic Film-Coupled Electrodes – J. P. McClure, K. N. Grew, J. Boltersdorf, G. T. Forcherio, D. R. Baker, and C. A. Lundgren (U.S. Army Research Laboratory)
- 10:30 **2619** Synthesis and Analysis of TiS₃ Nanoribbons – L. Y. Kuo and C. Y. Wang (National Taiwan University of Science and Technology)
- 10:50 **2620** Antimony Tri-Sulfide (Sb₂S₃) Nanowires Synthesis and Characterization – A. N. Tsai and C. Y. Wang (National Taiwan University of Science and Technology)
- 11:10 **2621** The Electronic Anisotropic of SnSe₂ Nanoflakes – L. F. Tsai and C. Y. Wang (National Taiwan University of Science and Technology)
- 11:30 **2622** Aluminum Indium Antimonide (Al_xIn_{1-x}Sb) Ternary Nanowires Synthesis and Characterization – Z. H. Wang and C. Y. Wang (National Taiwan University of Science and Technology)

Applications and Nanofabrication of Nanomaterials – 14:00 – 18:00
Co-Chairs: Oana Leonte, Zhi David Chen, Michael Strano, and Fumihiko Hirose

- 14:00 **2623** Two-Dimensional MoTe₂ PN Diode and CMOS Inverter By Atomic Layer Deposition-Induced Hydrogen Doping – J. Y. Lim, Y. Jeong, J. Ahn, and S. Im (Yonsei University)
- 14:20 **2624** 2D MoSe₂ Field Effect Transistor with Small Threshold Voltage for Piezoelectric Touch Sensor Applications – Y. Jeong, J. H. Park, J. Ahn, J. Y. Lim, and S. Im (Yonsei University)
- 14:40 **2625** Room-Temperature Atomic Layer Deposition of Aluminum Silicate for Molecule Sorption – Y. Mori, T. Imai (Yamagata University), K. Kanomata (CREST, JST), M. Miura, B. Ahmmad (Yamagata University), S. Kubota, and F. Hirose (CREST, JST)
- 15:00 **2626** Catalytic Nanoparticles Prepared By Atomic Layer Deposition – X. Wang and X. Liang (Missouri University of Science and Technology)
- 15:20 **2627** Synthesis of γ' -Fe₄n, a New Soft Magnetic Material for Inductors and Transformers – T. E. Stevens, C. J. Pearce, S. Atcitty, and T. Monson (Sandia National Laboratories)
- 15:40 Break
- 16:00 **2628** Plasmonic-Enhanced Remote Phosphor Layers for White LEDs – O. H. Kwon, J. W. Jang, C. Y. Lee, and Y. S. Cho (Yonsei University)
- 16:20 **2629** Probing Electrode-Electrolyte Interfaces Using Nano-Gap Surface-Enhanced Raman Spectroscopy and Imaging – G. Yang, I. N. Ivanov, R. E. Ruther (Oak Ridge National Laboratory), R. L. Sacci (University of Victoria*), V. Subjakova (Comenius University), D. T. Hallinan Jr. (Florida A&M University – Florida State University), and J. Nanda (Oak Ridge National Laboratory)

702

Nanotechnology General Session

All Divisions / Interdisciplinary Science and Technology Subcommittee
 Room 309, Washington State Convention Center

Synthesis and Characterization of Nanomaterials – 08:30 – 11:50

Co-Chairs: Oana Leonte, Zhi David Chen, Joshua P. McClure, and Ronan Botrel

- 08:30 **2614** Synthesis of Heterostructures of In₄Se₃/In Nanowires – A. H. Hsu and C. Y. Wang (National Taiwan University of Science and Technology)
- 08:50 **2615** Optical and Magnetic Properties of Ni-Doped CuSe Nanowires – C. Y. Wang (National Taiwan University of Science and Technology)

16:40	2630	Synthesizing Core-Shell Heterostructures for SOFCs Using a Solution Precipitation Method – B. Levitas, Y. Zhu, and S. Gopalan (Boston University)	10:20	2640	High-Temperature Neutron Diffraction and Oxide Ion Conduction Path for $Pb_{1-x}La_{2x/3}WO_4$ – T. Sano, S. Takai, S. Kaji, H. Do, T. Yabutsuka (Graduate School of Energy Science, Kyoto University), and T. Yao (National Institute of Technology, Kagawa College)
17:00	2631	Advances in Solid Acid Fuel Cells – R. A. Elgammal, A. B. Papandrew, M. Tian (University of Tennessee, Knoxville), G. M. Veith, B. Armstrong (Oak Ridge National Laboratory), and T. A. Zawodzinski Jr. (Oak Ridge National Laboratory, University of Tennessee-Knoxville)	10:40	2641	Electrochemical Reduction of Metal Oxides – M. Shi (University of Idaho), S. Li (Idaho National Laboratory), and H. Zhao (University of Idaho)
17:20	2632	Ultra-High Vacuum Fabrication of Ordered Nanoparticles and Their Device Applications – B. Das, G. M. Wilkins, and S. Das (University of Nevada, Las Vegas)	11:00	2642	A Nonlinear Model for Analyzing the Electrical Conductivity Relaxation Data of Mixed Ionic Electronic Conductors – M. B. Effat, E. Quattrocchi, T. H. Wan, M. Saccoccio, A. Belotti, and F. Ciucci (The Hong Kong University of Science and Technology)
17:40	2633	Maskless Photoelectrochemical Fabrication of Anisotropic Three-Dimensional Nanostructured Semiconductors – K. R. Hamann, A. I. Carim, J. R. Thompson, N. A. Batarra, H. A. Atwater, and N. S. Lewis (California Institute of Technology)	11:20	2643	Using Exotic Materials like EuD_4TEA to Monitor Damage and Radiation Exposure in Extreme Environments – W. A. Hollerman, J. Miller (University of Louisiana at Lafayette), P. Darby, N. Pugh (College of Engineering, Univ. of Louisiana at Lafayette), and R. Fontenot (Naval Surface Warfare Center Carderock)
			11:40	2644	Synthesis and Photoluminescence Properties of $(Sr, Ba)_{2-x}Eu_xSiO_4$ Phosphors with High Eu^{2+} Concentration for White LED Applications – Y. Sato (Department of Chemistry, Okayama University of Science), K. Tomita (Department of Chemistry, Tokai University), and M. Kakihana (IMRAM, Tohoku University)

Ballroom 6ABC, Washington State Convention Center

Z02 Poster Session – 18:00 – 20:00

Co-Chairs: Oana Leonte and Zhi David Chen

- **2634** Aqueous Phase Synthesis Method of Fe Metal Nanoparticles and Its Application for Commercial Materials – H. Takahashi (Graduate School of Environmental Studies, Tohoku Univ.)
- **2635** Investigation on Aerosol Jet Etching for Thin Film Patterning – D. H. Cho, E. T. Lim, S. H. Lee, J. S. Ryu, and C. W. Chung (Inha University)
- **2636** Molecular Dynamics Simulation Study of Ion Exchange Membranes for Fuel Cell Application – S. Y. Nam (Gyeongsang National University), C. H. Park (Gyeongnam National University of Science and Technology), and Y. T. Hong (Korea Research Institute of Chemical Technology)

Z03 Solid State Topics General Session
 Dielectric Science and Technology / Electronics and Photonics / Energy Technology / Luminescence and Display Materials / Nanocarbons / Organic and Biological Electrochemistry / Sensor
Room 307, Washington State Convention Center

Solid State General Morning Session – 09:00 – 12:00

Co-Chairs: Kalpathy B. Sundaram, Hiroshi Iwai, Oana Leonte, and William A. Hollerman

- | | | |
|-------|-------------|--|
| 09:00 | 2637 | Effect of Ti Content on Physical Properties and Electrical Characteristics of High-k Yb_2TiO_5 Gate Dielectrics for InZnSnO Thin-Film Transistors – C. H. Chen, J. L. Her (Chang Gung University), K. Koyama (Kagoshima University), and T. M. Pan (Chang Gung University, Chang Gung Memorial Hospital) |
| 09:20 | 2638 | Investigation on Electrical Properties of Hydrogen Doped Boron Carbide Thin Films – S. Nehate (University of Central Florida) and K. B. Sundaram (Univ. of Central Florida) |
| 09:40 | 2639 | Electrochemical Performance of a $Na-\beta''$ -Alumina+ YSZ Composite As a Mixed Ionic Conductor – L. Ghadbeigi (University of Utah), T. Sparks, and A. Virkar (University of Utah) |
| 10:00 | | Break |

Solid State General Afternoon Session – 15:00 – 16:40

Co-Chairs: Kalpathy B. Sundaram and Oana Leonte

- | | | |
|-------|-------------|--|
| 15:00 | 2645 | $BaFeO_{3-\Delta}$ -Based Materials for Intermediate-Temperature Solid Oxide Fuel Cells and Beyond – F. Ciucci (The Hong Kong University of Science and Technology) |
| 15:20 | 2646 | High Performance Low Temperature Solid Oxide Fuel Cells with Alkali Metal Carbonate Additives in Co-Doped Ceria Electrolyte – I. Khan (Indian Institute of Technology Delhi) and S. Basu (I.I.T. Delhi) |
| 15:40 | 2647 | NiMo-Ceria-Zirconia Catalyst for Inert-Substrate-Supported Tubular Solid Oxide Fuel Cells Running on Model Gasoline – K. Zhao, M. G. Norton, and S. Ha (Washington State University) |
| 16:00 | 2648 | Defect Chemistry and Lithium-Ion Transport in Doped Li_2ZrO_3 : The Role of Oxygen Vacancies – X. Zhan, M. Shirpour, and Y. T. Cheng (University of Kentucky) |
| 16:20 | 2649 | Synthesis and Processing of Nasion/Polymer Membranes – S. J. Chiang (Wanger Institute for Sustainable Energy Research, Illinois Institute of Technology), C. Liu, and L. Shaw (Illinois Institute of Technology) |

Z03 Poster Session – 18:00 – 20:00

- 2650 High Throughput Experimental Methodologies for Accelerating Solid State Lithium-Ion Battery Development – A. Huang (MTI Corporation)
- 2651 Development of Reversible Solid Oxide Cell System at Korea Institute of Energy Research – J. H. Myung, S. R. Park, and S. K. Woo (Korea Institute of Energy Research)
- 2652 Etch Characteristics of Cu Thin Film Using Inductively Coupled Plasma of Non-Greenhouse Gases – E. T. Lim, J. S. Choi, S. H. Lee, J. S. Ryu, and C. W. Chung (Inha University)
- 2653 Dielectric and Ferroelectric Properties of Rare Earth Doped Lead Zirconate Titanate Ceramics – M. K. Bhattarai (Dept. of Physics, University of Puerto Rico, San Juan PR USA), S. P. Pavunny (U.S. Naval Research Laboratory, Washington DC), A. A. Instan, and R. S. Katiyar (Dept. of Physics, University of Puerto Rico, San Juan PR USA)
- 2654 Effect of Ni-Doping on Electrochemical Performance of Olivine $\text{LiFe}_{1-x}\text{Ni}_x\text{PO}_4$ for Sodium-Ion Batteries – L. T. N. Huynh, N. T. H. Nguyen (APCLAB, VNUHCM-University of Science), H. V. Nguyen (University of Science), T. V. Man (VNU-HCM-APCLab), and P. M. L. Le (VNU-HCM University of Science)

THURSDAY, MAY 17

A01

Battery and Energy Technology
Joint General Session

Battery / Energy Technology

Room 607, Washington State Convention Center

Lithium Battery - Computational – 08:00 – 12:40

Co-Chairs: Manan Pathak and Ming Tang

- | | | |
|-------|-----|--|
| 08:00 | 165 | Model Based Battery Management Systems (BMS) – from Theory to Practice – M. Pathak, C. Pathak, T. Jang (University of Washington, Seattle), and V. R. Subramanian (Pacific Northwest National Laboratory, University of Washington, Seattle) |
| 08:20 | 166 | Competition Between Principal Ageing Mechanisms of Graphite Electrodes for Lithium-Ion Batteries, Enlightened with Physics-Based Models – N. Dufour (CEA, Université Grenoble Alpes), M. Chandesris (Univ. Grenoble Alpes, CEA, LITEN, Grenoble), M. Cugnet (CEA), and Y. Bultel (LEPMI) |
| 08:40 | 167 | Cyberdesign Computational Algorithm: Selecting Anode and Cathode Materials through Simulation for Lithium-Ion Batteries Based on Diffusivity – Z. Miller, I. Miske, and H. Hosseinzadeh (Rowan University) |
| 09:00 | 168 | Role of Transition Metal Identity in Suppression of Interlayer Migration in Layered Cathode Materials – J. Vinkeviciute, M. Radin, and A. Van der Ven (University of California, Santa Barbara) |
| 09:20 | 169 | A Simple Formula Describing Impedance Artifacts Due to the Size and Surface Resistance of a Reference-Electrode Wire in a Thin-Film Cell – M. W. Verbrugge, D. R. Baker (General Motors, R&D Center), and X. X. Hou (General Motors Global Propulsion Systems) |
| 09:40 | 170 | New Insights into Computational Fluid Dynamic (CFD) Modeling of Concentration Overpotential – Z. Jalili (Department of Energy and Process Engineering, NTNU, Department of Materials Science and Engineering, NTNU), O. S. Burheim (Department of Energy and Process Engineering, Norwegian University of Science and Technology), and K. E. Einarsrud (Department of Materials Science and Engineering, Norwegian University of Science and Technology) |
| 10:00 | 171 | Na^+ Ion Transport in $x\text{Na}_2\text{S} - (1-x)\text{P}_2\text{S}_5$ thiophosphate Glasses: An <i>Ab Initio</i> Molecular Dynamics Study – A. Dive (Washington State University), S. W. Martin (Iowa State University), Y. Yao (University of Houston), S. P. Beckman, and S. Banerjee (Washington State University) |
| 10:20 | 172 | Defect Chemistry and Lithium Transport in ANTI-Perovskite Superionic Conductors – F. Ciucci and Z. Lu (The Hong Kong University of Science and Technology) |

- 10:40 **173** Coupled Electrochemistry and Mechanics in Mesoscale Simulation of NMC Cathodes – M. E. Ferraro, B. L. Trembacki, V. E. Brunini, D. R. Noble, and S. A. Roberts (Sandia National Laboratories)
- 11:00 **174** A Combinatorial Approach to New Anode Materials for Aqueous Batteries – M. P. Marshak (University of Colorado Boulder)
- 11:20 **175** Mathematical Modeling of the Li_2S Precipitation Process in Li-S Batteries – Y. Xie (Argonne National Laboratory) and V. Srinivasan (Lawrence Berkeley National Laboratory)
- 11:40 **176** Simplified Computational Model for Evolution of Particle Morphology during Coprecipitation – P. Barai, Z. Feng, H. Kondo, and V. Srinivasan (Argonne National Laboratory)
- 12:00 **177** Analytical Model for Predicting the Discharge Performance of Thick Battery Electrodes – F. Wang and M. Tang (Rice University)
- 12:20 **178** Computational Study on Oxidation Potential Variations of Electrolytes with Complexation in Lithium-Sulfur (Li/S) Batteries – J. Han and P. B. Balbuena (Department of Chemical Engineering, Texas A&M University)

A02

Large-Scale Energy Storage 9

Electronics and Photonics / Battery / Industrial Electrochemistry and Electrochemical Engineering
Room 604, Washington State Convention Center

Aqueous Systems 3 – 09:00 – 11:20

Co-Chairs: Wei Wang and Claire Xiong

- 09:00 **237** New Organic Molecules for Energy Storage Applications – R. D. Webster (Nanyang Technological University)
- 09:20 **238** Electrochemical Properties of Quinone Derivatives: First-Principles Density Functional Theory Modeling and Machine Learning Approach – B. W. Cho and S. S. Jang (Georgia Institute of Technology)
- 09:40 **239** Materials Development for Aqueous Organic Redox Flow Batteries – X. Wei (Pacific Northwest National Laboratory, Joint Center for Energy Storage Research), A. Hollas (Pacific Northwest National Laboratory), Z. Yang (Pacific Northwest National Laboratory, Joint Center for Energy Storage Research), J. Huang (Argonne National Laboratory, Joint Center for Energy Storage Research), V. Murugesan (Pacific Northwest National Laboratory, Joint Center for Energy Storage Research), E. Walter, B. Li, Z. Nie, D. Reed (Pacific Northwest National Laboratory), Z. Zhang (Joint Center for Energy Storage Research), W. Wang, and V. Sprenkle (Pacific Northwest National Laboratory)
- 10:00 **240** An Evaluation of Carbon and Mixed Metal Oxide Electrodes for High Voltage Redox Flow Batteries – J. Murphy (Case Western Reserve University), T. Petek (De Nora Tech LLC), and J. S. Wainright (Case Western Reserve University, Cleveland, Ohio, USA)
- 10:20 **241** A High-Voltage Aqueous Flow Battery Based on Highly Soluble Organometallic Materials – B. Li, A. Hollas, Z. Nie (Pacific Northwest National Laboratory), X. Wei (Joint Center for Energy Storage Research), W. Wang (Joint Center for Energy Storage Research (JCESR)), D. Reed, and V. Sprenkle (Pacific Northwest National Laboratory)

- 10:40 **242** Understanding and Mitigating Capacity Fade in Aqueous Organic Redox Flow Batteries – A. Murali, A. Nirmalchandar, S. Krishnamoorthy, L. Hooper-Burkhardt, B. Yang, G. K. S. Prakash, and S. R. Narayanan (University of Southern California)
- 11:00 **243** Redox Flow Batteries Utilizing Aqueous-Soluble Organic Electrolytes – A. Hollas (Pacific Northwest National Laboratory), X. Wei (Joint Center for Energy Storage Research), B. Li, Z. Nie, V. Murugesan (Pacific Northwest National Laboratory), W. Wang (Joint Center for Energy Storage Research (JCESR)), D. Reed, and V. Sprenkle (Pacific Northwest National Laboratory)

A03

Li-ion Batteries and Beyond

Battery / Physical and Analytical Electrochemistry

Room 608, Washington State Convention Center

Lithium-Ion Electrolytes – 08:00 – 11:00

Co-Chairs: Ritu Sahore and Chen Liao

- 08:00 **567** Identification of Organic Species Generated at Each Electrode during Potentiostatic Hold of a Two-Compartment Lithium-Ion Cell By Liquid Chromatography-Electrospray Ionization Mass Spectrometry (HPLC/ESI-MS) Analysis – R. Sahore, J. Barenó, and I. Bloom (Argonne National Laboratory)
- 08:20 **568** New Additives for Li Ion Batteries – C. Liao (Joint Center for Energy Storage Research (JCESR), Argonne National Laboratory), I. A. Shkrob (Chemical Sciences and Engineering Division), R. Sahore (Argonne National Laboratory), A. Tornheim (Chemical Sciences and Engineering Division), D. P. Abraham (Argonne National Lab), and Z. Zhang (Joint Center for Energy Storage Research)
- 08:40 **569** Nuclear Magnetic Resonance Investigations of a Next-Generation Battery Lithium Polymer Electrolyte – S. A. Munoz (Hunter College of City University of New York, The Graduate Center of CUNY), M. Gobet (Department of Physics and Astronomy, Hunter College, CUNY), M. Zimmerman, R. Leising (Ionic Materials, Inc.), and S. Greenbaum (Hunter College of City University of New York)
- 09:00 **570** Oxidatively Stable Fluorinated Sulfones Electrolytes for High Voltage High Energy Li-Ion Batteries – C. C. Su, M. He, A. Tornheim (Chemical Sciences and Engineering Division, Argonne National Laboratory), J. Cao (Worcester Polytechnic Institute, Argonne National Laboratory), P. Redfern (Materials Science Division, Argonne National Labo, Argonne National Laboratory), I. A. Shkrob, and Z. Zhang (Chemical Sciences and Engineering Division, Argonne National Laboratory)
- 09:20 **571** Break
- 09:40 **571** Approaches to Complex Electrolyte Formulation Optimization – G. Cheng, Y. Zhu, and D. Strand (Wildcat Discovery Technologies)
- 10:00 **572** (Invited) High Voltage Aqueous Batteries – K. Xu (Army Research Laboratory)

10:40 573 Characterization of the Intrinsic Thermal and High-Voltage Stability of Organosilicon-Containing Electrolytes – S. L. Guillot (University of Wisconsin-Madison), M. L. Usrey (Silatronix), A. Peña Hueso (Silatronix, Inc.), and R. J. Hamers (University of Wisconsin-Madison)

Room 609, Washington State Convention Center

Lithium-Air 1 – 08:00 – 12:00

Co-Chairs: Honorio Valdes-Espinosa and Helmut Baltruschat

08:00 574 Design and Preparation of Cathode Catalysts for High-Performance Lithium-Oxygen Batteries – K. X. Wang (Shanghai Jiao Tong University)

08:20 575 Improving Cathode and Electrolyte Stability in Lithium-Oxygen Batteries – D. A. Dornbusch (Case Western Reserve University, NASA Glenn Research Center), F. W. Dynys (NASA Glenn Research Center), B. Radhakrishnan (NASA-Ames Research Center, AMA Inc), and R. Viggiano (NASA Glenn Research Center)

08:40 576 Insights into the Kinetics of Redox Mediation for Li-O₂ Batteries: A Dems and RRDE Study – P. P. Bawol, J. H. Thimm (Universität Bonn), and H. Baltruschat (University of Bonn)

09:00 577 High Concentration of LiBr in Electrolyte and Graphene-Polydopamine Composite Layer on Li Metal for High Efficient and Long Term Cycling Li-O₂ Batteries – W. J. Kwak and Y. K. Sun (Department of Energy Engineering, Hanyang University)

09:20 578 Understanding the Role of Solvent and Added Water on the Effectiveness of Lithium Iodide As a Redox Mediator in Lithium Oxygen Batteries – G. Leverick, M. Tulodziecki, Y. Katayama, R. Tataru (Massachusetts Institute of Technology), S. Feng (ChemE/Massachusetts Institute of Technology), F. Bardé (Toyota Motor Europe), and Y. Shao-Horn (Massachusetts Institute of Technology)

09:40 Break

10:00 579 Tuning Graphene Pore Size for Improved Performance in Na-O₂ Batteries – M. Enterria, C. Botas (CIC EnergiGUNE), B. Acebedo (CIC EnergiGUNE), J. M. López del Amo (CIC EnergiGUNE), D. Carriazo (CIC EnergiGUNE, Ikerbasque), T. Rojo (CIC energiGUNE, University of the Basque Country), and N. Ortiz Vitoriano (CIC EnergiGUNE, Ikerbasque)

10:20 580 Enhanced Stability of Coated Carbon Electrode for Li-O₂ Batteries and Its Limitations – Y. Bae (Seoul National University), S. Lee (Konkuk University), H. D. Lim (University of California, San Diego), H. Park (Seoul National University), Y. S. Min (Konkuk University), and K. Kang (Seoul National University)

10:40 581 Characterization of Charge Reactions of Li-Air Battery Cathodes Studied with Field Ionization Methods – H. Valdes-Espinosa, S. B. Adler, and E. M. Stuve (University of Washington)

11:00 582 Strategies to Facilitate the Electron Transfer in Li-O₂ Battery Charging Process – Y. Shen (laboratory of energy storage and conversion)

11:20 583 Lithium-Oxygen Batteries with Ultrahigh Areal Capacities: Critical Roles of Air Cathode Architecture – Y. Lin, J. W. Kim (National Institute of Aerospace), and J. W. Connell (NASA Langley Research Center)

11:40 584 Critical Indicator Determining the Discharge Capacity of Li-Oxygen Batteries – Y. Hase (Toyota Central R&D Labs., Inc.), Y. Komori (Osaka University), J. Seki, T. Shiga (Toyota Central R&D Labs., Inc.), K. Kamiya, and S. Nakanishi (Osaka University)

Room 608, Washington State Convention Center

Lithium Ion Anodes 4 – 11:00 – 12:00

Co-Chairs: Shrikant C. Nagpure and Emily Ryan

11:00 585 XPS Analysis and XPS Imaging of the Passivation Film Formed on Metallic Lithium Electrodes Cycled in Different Liquid Organic Electrolytes – R. Grissa, P. Moreau, V. Fernandez, J. Hamon, N. Stephant, D. Guyomard (IMN, CNRS/University of Nantes), N. Fairley (Casa Software Ltd, Teignmouth, UK), J. Rolland, R. Bouchet (LEPMI, CNRS/University of Grenoble), M. Lécuyer, and M. Deschamps (BlueSolutions, Quimper, France)

11:20 586 Improving the Performance of PEO-Based Electrolytes to Enable Metallic Li As an Anode – A. Gupta and J. Sakamoto (University of Michigan, Ann Arbor)

11:40 587 A Simple Metallic Coating on Separator for Lithium Dendrite Suppression – H. Lee, X. Ren, C. Niu, L. Yu, M. H. Engelhard, J. Liu, W. Xu, and J. G. Zhang (Pacific Northwest National Laboratory)

Room 609, Washington State Convention Center

Lithium-Air 2 – 13:00 – 15:00

Co-Chairs: Honorio Valdes-Espinosa and Helmut Baltruschat

13:00 588 Nanocrystalline Metal-Organic Frameworks/Carbon Nanotubes Composites As Catalytic Cathode Materials for Lithium-Oxygen Batteries with Long Cycle Life – X. Zhang, J. I. Lee, Y. Cha, P. Dong, and M. K. Song (Washington State University)

13:20 589 High Volumetric Energy Density Li-Air Battery; Cell Scale Design, Modeling and Simulation – H. C. Lee (Samsung Electronics Co., Ltd., Samsung Advanced Institute of Technology)

13:40 590 Analyzing Microstructural and Electrolyte Phase Limitations in Li-Air Battery Performance – A. N. Mistry and P. P. Mukherjee (Purdue University)

14:00 591 Oxygen Reduction Reaction Kinetics at the K-O₂ Cell Cathode – S. Sankarasubramanian (Washington University in St. Louis) and V. K. Ramani (Washington University in St. Louis)

14:20 592 Co_{0.5}Mn_{0.5}WO₄ as a New Bifunctional Cathode for Non-Aqueous Li-O₂ Batteries – G. K. and A. S. Prakash (Central Electrochemical Research Institute, Madras unit)

14:40 593 Development of Transparent Secondary Zinc Air Batteries with Extreme Mechanical Robustness – O. C. Kwon (Yonsei University), H. J. Hwang (New energy and battery engineering, Yonsei University), Y. Ji, O. Jeon, J. P. Kim, C. M. Lee, and Y. G. Shul (Yonsei University)

Room 608, Washington State Convention Center

Lithium Ion Anodes 5 – 13:00 – 17:00

Co-Chairs: Shrikant C. Nagpure and Emily Ryan

13:00 594 Cryogenic Focused Ion Beam Characterization of Alkali Metal Anodes – J. Z. Lee (University of California San Diego), T. A. Wynn (University of San Diego), J. Alvarado (Department of NanoEngineering UC San Diego), H. S. Hirsh (University of California San Diego), and Y. S. Meng (University of California - San Diego)

13:20 595 Understanding Coulombic Efficiency Losses in Lithium Metal Anodes through Operando X-Ray Diffraction – N. R. Geise, R. M. Kasse (Stanford University), H. G. Steinrueck (Stanford Synchrotron Radiation Lightsource), and M. F. Toney (SLAC National Accelerator Laboratory)

13:40 596 Effect of Formation Rates on Performance of Lithium Metal Batteries – S. C. Nagpure, S. M. Wood, E. J. Dufek, C. C. Dickerson (Idaho National Laboratory), B. Y. Liaw (Idaho National Laboratory), and V. W. Hu (University of Washington)

14:00 597 Li Storage in a Low Intercalation Potential $\text{Li}_2\text{TiSiO}_5$ – Y. Y. Xia (Fudan University)

14:20 598 Micro-Patterning Technology and Conformal Protective Coating for Lithium Metal Electrodes – J. Park (DGIST), D. Jin (Hanbat National University), S. Byun, Y. Roh (DGIST), M. H. Ryou (Hanbat National University), and Y. M. Lee (DGIST)

14:40 Break

15:00 599 Initial Formation of the Solid Electrolyte Interphase in Li Metal Batteries – R. M. Kasse, N. R. Geise (Stanford University), and M. F. Toney (SLAC National Accelerator Laboratory)

15:20 600 Lithium Dendrite Suppression through Controlled Mass Transfer – E. Ryan (Boston University) and J. Tan (Shenzhen University)

15:40 601 Study of Electrolyte for the Uniform Nucleation and Growth of Lithium for Rechargeable Lithium Metal Batteries – M. S. Lee (Samsung SDI), J. R. Kim, Y. E. Kim (Samsung Electronics), and S. I. Han (Samsung SDI)

16:00 602 Understanding the Lithiation/Delithiation Mechanism of $\text{Si}_{1-x}\text{Ge}_x$ Alloys – L. C. Loaiza (Laboratoire de Réactivité et Chimie des Solides, Université de Picardie, Jules Verne), E. Salager (CNRS, CEMHTI UPR3079, Réseau sur le Stockage Electrochimique de l'Énergie, RS2E), N. Louvain (Institut Charles Gerhardt, Réseau sur le Stockage Electrochimique de l'Énergie, RS2E), A. Boulaoued (Institute Charles Gerhardt Montpellier, ALISTORE European Research Institute), A. Iadecola (Synchrotron SOLEIL, Réseau sur le Stockage Electrochimique de l'Énergie, RS2E), P. Johansson (Chalmers University of Technology, Department of Physics, ALISTORE European Research Institute), L. Stievano (Réseau sur le Stockage Electrochimique de l'Énergie, RS2E, Institut Charles Gerhardt), V. Seznec (Laboratoire de Réactivité et de Chimie des Solides, Réseau de Stockage Electrochimique de l'Énergie, RS2E), and L. Monconduit (Réseau sur le Stockage Electrochimique de l'Énergie, RS2E, Institut Charles Gerhardt)

16:20 603 *In Situ* Observation of Lithium Dendrite of Different Graphite Electrodes – R. Zhu, J. Feng, and Z. Guo (shanghai University)

16:40 604 Effects of Electrolyte Volume and Salt Concentration on SEI Stability and Cycling Performance of Lithium Metal Anodes – S. M. Wood, S. C. Nagpure, E. J. Dufek, and S. V. Sazhin (Idaho National Laboratory)

B03

Carbon Nanotubes - From Fundamentals to Devices

Nanocarbons / Physical and Analytical Electrochemistry

Room 205, Washington State Convention Center

Devices 2 – 08:00 – 10:00

Co-Chair: Sofie Cambre

08:00 736 Aqueous Based Asymmetrical-Bipolar Electrochemical Capacitor with a 2.4 V Operating Voltage – H. Wu and K. Lian (University of Toronto)

08:20 737 Kinetics of Lithium - Ion Transfer at Carbon-Electrolyte Interface in Presence of Conducting Nano-Fillers – S. Ahamad and A. Gupta (Indian Institute of Technology Delhi)

08:40 738 *(Invited)* Long-Lived Charge Separation across Interfaces with Semiconducting Single-Walled Carbon Nanotubes – J. L. Blackburn, H. S. Kang, A. J. Ferguson, D. Arias, and J. C. Johnson (National Renewable Energy Laboratory)

09:00 739 Dramatic Nano-Fluidic Properties of Carbon Nanotube Membranes As a Platform for Programmable Transdermal Drug Delivery – B. J. Hinds (Univ. of Washington)

09:20 740 *(Invited)* Single-Molecule Sensor Arrays with Carbon Nanotube Transistors – P. G. Collins (Univ. of California, Irvine)

09:40 Break

Devices 3 – 10:00 – 11:40

Co-Chair: Tomohiro Shiraki

10:00 741 *(Invited)* Localized Covalent Defects on Carbon Nanotube Devices for Sensor Applications – D. Bouilly (IRIC, Université de Montréal)

- 10:20 742 Solution Processable Carbon Nanotube Biosensors with Multisensing Capability – X. Xu, P. Clement (Queen Mary University of London), J. V. R. Eklöf, K. Moth-Poulsen (Chalmers University of Technology), J. Chavez (711th Human Performance Wing, AFRL), and M. Palma (Queen Mary University of London)
- 10:40 743 Dielectrics & Electrostatics: Their Effect on Carbon Nanotube Network Field-Effect Transistors and Gas Sensors – F. Lapointe, P. R. L. Malenfant, and J. Lefebvre (National Research Council Canada)
- 11:00 744 *(Invited)* Dense Layers of (6,5) Nanotubes for Optical and Charge Transport Applications – J. Zaumseil (Heidelberg University)
- 11:20 745 *(Invited)* Avalanche Photoemission in Suspended Carbon Nanotubes: Light without Heat – S. B. Cronin and B. Wang (University of Southern California)

Optics 3 – 11:40 – 12:20

Co-Chairs: Ben Flavel and Stephen K. Doorn

- 11:40 746 *(Invited)* Carbon Nanotube Photoluminescence Spectroscopy for Applications in Cancer Research – D. A. Heller (Weill Cornell Medicine, Cornell University), J. Budhathoki-Uprety (Memorial Sloan Kettering Cancer Center), T. V. Galassi (Weill Cornell Medicine, Cornell University), R. Frederiksen, J. Harvey (Memorial Sloan Kettering Cancer Center), C. P. Horoszko (cornell), P. V. Jena (Memorial Sloan Kettering Cancer Center), R. E. Langenbacher (Weill Cornell Medical College, Cornell University), D. Roxbury, J. Shah, Y. Shamay, R. M. Williams, and H. Baker (Memorial Sloan Kettering Cancer Center)
- 12:00 747 Quantum Yield Effects of Modified DNA Sequences on Single-Walled Carbon Nanotube (SWCNT) Fluorescence – A. J. Gillen, B. P. Lambert, D. Molina-Romero, and A. A. Boghossian (École Polytechnique Fédérale de Lausanne)

Optics 4 – 14:40 – 17:00

Co-Chairs: Stephen K. Doorn and Benjamin S. Flavel

- 14:40 700 Influence of Carbon Nanotube Chirality on Sodium Cholate Adsorption in Aqueous Suspensions – F. Schoeppler (Julius-Maximilian University Wuerzburg), I. Vollert, F. Bergler (Julius-Maximilians-University Wuerzburg), and T. Hertel (Julius-Maximilian University Wuerzburg)
- 15:00 749 *(Invited)* Nanotube Excitonic Emitter at the Subwavelength Scale – S. V. Rotkin (The Pennsylvania State University) and B. J. Sofka (Lehigh University)
- 15:20 750 *(Invited)* Photoluminescence from an Individual Double-Walled Carbon Nanotube – T. Michel (Laboratoire Charles Coulomb), D. Levshov (Laboratoire Charles Coulomb, Faculty of Physics, Southern Federal University, Russia), M. Paillet (Laboratoire Charles Coulomb), R. Arenal (Instituto de Nanociencia de Aragón, ARAID Foundation), V. Popov (Faculty of Physics, University of Sofia, Bulgaria), R. Parret (Laboratoire Charles Coulomb), C. Nguyenvan (Institute of Materials Science, VAST), S. Rochal (Faculty of Physics, Southern Federal University, Russia), A. Zahab, and J. L. Sauvajol (Laboratoire Charles Coulomb)

- 15:40 Break
- 16:00 751 *(Invited)* Diameter-Dependent Optical Absorption and Energy Transfer from Encapsulated Dye Molecules to Single Wall Carbon Nanotubes – W. Wenseleers, S. Van Bezouw, J. Campo, S. Cambré, J. Defillet (University of Antwerp), D. Arias, R. Ihly, A. J. Ferguson, J. C. Johnson, and J. L. Blackburn (National Renewable Energy Laboratory)
- 16:20 752 A New Method for Quantifying SWCNT Dispersion Quality from Absorption Spectra – Y. Zheng, S. R. Sanchez, S. M. Bachilo, and R. B. Weisman (Rice University)
- 16:40 753 *(Invited)* Delayed Fluorescence from Single-Walled Carbon Nanotubes Induced By Energy Transfer from Singlet Oxygen – S. M. Bachilo, C. W. Lin, and R. B. Weisman (Rice University)

B05 Fullerenes - Endohedral Fullerenes and Molecular Carbon

Nanocarbons

Room 204, Washington State Convention Center

Properties of Fullerenes – 08:00 – 10:00

Co-Chairs: Steven Stevenson and Alexey A. Popov

- 08:00 814 *(Invited)* Fullerene-Based Single Molecule Magnets: Bulk and Surface Magnetism – A. A. Popov, D. Krylov (IFW Dresden), C. H. Chen (The University of Texas at El Paso), F. Liu (IFW Dresden), S. Avdoshenko (Purdue University), and A. Brandenburg (IFW Dresden)
- 08:20 815 *(Invited)* Synthesis and Stabilization of the Unstable Dimetallofullerenes – F. Liu (IFW Dresden), L. Spree (IFW-Dresden), and A. A. Popov (IFW Dresden)
- 08:40 816 *(Invited)* Changing the Conformation of Paramagnetic Endohedral Fullerenes with Magnetic Fields – T. Greber (Universität Zürich)
- 09:00 817 *(Invited)* The Effect of Nitrogen Source on the Production of Uranium Metallofullerenes Possessing Non-IPR Cages – W. Cai (The University of Texas at El Paso), J. Murillo (Univ. of Texas at El Paso), M. A. G. Torres (The University of Texas at El Paso), N. Chen (Soochow University), and L. Echegoyen (The University of Texas at El Paso)
- 09:20 818 *(Invited)* Stable Azaheterometallofullerene $M_2@C_{79}N$ ($M = Y, Gd, Tb$) in Novel Electronic and Magnetic Applications – K. M. Kirkpatrick, X. Liu (Virginia Tech Chemistry), Y. Li (Virginia Tech Physics), J. Duchamp (Virginia Tech Chemistry), C. Tao (Virginia Tech Physics), A. A. Popov (IFW Dresden), and H. C. Dorn (Virginia Tech Chemistry)
- 09:40 Break

Energy Conversion – 10:00 – 12:20

Co-Chairs: Tomas Torres and Hiroshi Imahori

- 10:00 819 *(Invited)* Exciplex Formation and Decay in Porphyrin-Carbon Nanotube Ensembles – H. Imahori (Kyoto University)
- 10:20 820 *(Invited)* Photovoltaic Performance and Stability of Fullerene/Cerium Oxide Double Electron Transport Layer Superior to Single One in *P-I-N* Perovskite Solar Cells – S. Y. Xie (Department of Chemistry, Xiamen University), M. L. Zhang, and J. Xiao (Xiamen University)

- 10:40 **821** *(Invited)* Highly Stabilized Perovskite Solar Cells By Li-Ion-Containing Fullerene Salt As Both Dopant and Anti-Oxidant – Y. Matsuo (University of Science and Technology of China, The University of Tokyo), I. Jeon (The University of Tokyo), and H. Ueno (Northeast Normal University)
- 11:00 **822** *(Invited)* Inverted Planar Perovskite Solar Cells Using Coordination Fullerene Polymers As Acceptor Layer – K. Winkler, E. Gradzka, M. Wysocka-Zolopa (Institute of Chemistry, University of Bialystok), M. Enachescu, C. Moise, and A. Pumnea (University POLITEHNICA of Bucharest)
- 11:20 **823** *(Invited)* Purification and Frontier Orbital Characterisation of 19 Isomers of the OPV Acceptor Material Bis[60]PCBM – J. Dennis, W. Shi, X. Hou, and T. Liu (Queen Mary University of London)
- 11:40 **824** *(Invited)* Structural Identification of 19 Purified Isomers of Opv Acceptor Material Bis[60]PCBM – T. Liu, I. Abrahams, and J. Dennis (Queen Mary University of London)
- 12:00 **825** *(Invited)* Lock-in Thremography of Carbon Nanotube Composites and Graphene – T. Okazaki (CNT-Application Research Center, AIST)

Applications of Fullerenes – 14:40 – 15:40

Co-Chair: Su-Yuan Xie

- 14:40 **826** *(Invited)* High Efficient Tumor Therapeutic Technique Based on Water Soluble Metallofullerene Derivatives – C. Wang (Institute of Chemistry, Chinese Academy of Sciences)
- 15:00 **827** *(Invited)* Paramagnetic Endohedral Fullerenes for Biomedical Applications – S. Cornes, S. Zhou, T. Barendt, X. Zheng (University of Oxford), S. Eaton, G. Eaton (University of Denver), J. Davis, P. Beer, and K. Porfyrakis (University of Oxford)
- 15:20 **828** *(Invited)* Fullerene Nanostructures: Preparation and Application – S. Zheng (Huazhong University of Science and Technology) and X. Lu (Huazhong University of Science and Technology)

B06

2D Layered Materials from Fundamental Science to Applications

Nanocarbons / Dielectric Science and Technology / Electronics and Photonics / Industrial Electrochemistry and Electrochemical Engineering
Room 201, Washington State Convention Center

Properties and Devices 2 – 08:00 – 12:00

Co-Chair: Aaron D. Franklin

- 08:00 **888** Colloidal, Nanoelectronic State Machines Based on 2D Materials for Aerosolizable Electronics – V. Koman, P. Liu, D. Kozawa, A. T. Liu, A. Cottrill, and M. S. Strano (MIT)
- 08:20 **889** *(Invited)* 3D Circuitry and Folding with 2D Crystals – J. Park (University of Chicago)
- 08:40 **890** *(Invited)* 2D MoS₂ Film Logic Devices: Challenges and Solutions Through Molecular Functionalization – C. J. Lockhart de la Rosa (KU Leuven, imec)

- 09:00 **891** *(Invited)* Autoperforation of 2D Materials for Generating Two Terminal Memresistive Janus Particles – P. Liu, A. T. Liu, D. Kozawa (MIT), J. Dong, M. Saccone (Massachusetts Institute of Technology), V. Koman (MIT), S. Wang (Zhejiang University), Y. Son (Massachusetts Institute of Technology), M. H. Wong (MIT), and M. S. Strano (Massachusetts Institute of Technology)
- 09:20 **892** *(Invited)* 2D Semiconductors in Large-Area Flexible Opto/Electronics – T. D. Anthopoulos (King Abdullah University of Science & Technology (KAUST))
- 09:40 Break
- 10:00 **893** *(Invited)* Emerging Two-Dimensional Materials for Electronic and Photonic Device Applications – H. Wang (University of Southern California)
- 10:20 **894** *(Invited)* 2D and 2D/3D hybrid Photodetectors – M. C. Lemme (AMO GmbH)
- 10:40 **895** *(Invited)* 2D Materials Heterostructures for Electronic Applications – G. Fiori (University of Pisa)
- 11:00 **896** *(Invited)* Atomristor: Universal Non-Volatile Resistance Switching in Monolayer Atomic Sheets of Transition Metal Dichalcogenides – R. Ge, X. Wu, M. Kim, J. Lee, and D. Akinwande (The University of Texas at Austin)
- 11:20 **897** *(Invited)* 2D Diffusion Barriers for Ultra-Scaled Interconnect Technology – C. L. Lo, S. Zhang, and Z. Chen (Purdue University)
- 11:40 **898** *(Invited)* All-Carbon Interconnects - from 1D to 3D – C. Y. Yang (Center For Nanostructures, Santa Clara University)

Properties and Devices 3 – 14:00 – 15:20

Co-Chair: Michael S. Arnold

- 14:00 **899** *(Invited)* 2D Semiconductor Electronics: Advances, Challenges and Opportunities – A. Javey (University of California, Berkeley)
- 14:40 **900** Ammonia Sensing Using Transfer-Free in Situ CCVD Grown Nanocrystalline Graphene Field Effect Transistors – D. Noll (Technische Universität Darmstadt), P. Hönicke, B. Beckhoff (Physikalisch-Technische Bundesanstalt (PTB)), and U. Schwalke (Technische Universität Darmstadt)
- 15:00 **901** Measurement of Two Dimensional Van Der Waals Materials' Bandgap Using Ambipolar Field Effect Transistor with Graphene Contact and hBN Passivation – S. Park, J. Y. Lim, J. Ahn, and S. Im (Yonsei University)

B07

Inorganic/Organic Nanohybrids for Energy Conversion

Nanocarbons

Room 203, Washington State Convention Center

Nanostructure 4 – 08:00 – 10:00

Co-Chairs: Ichizo Yagi and Kohei Uosaki

- 08:00 **943** Electrophoretic Co-Deposition of Graphene/Metal Oxide Platelets for Composite Electrode Fabrication – A. Rashti and T. S. Oh (Auburn University)
- 08:20 **944** *(Invited)* Effect of Substrate-Metal Interaction on the Oxygen Reduction Reactivity at Pt-Ni Nanoframe Deposited on N-Doped Carbon Supports – I. Yagi, K. Ogura, S. Tokuda, and M. Kato (Hokkaido University)

- 08:40 945 *(Invited)* Understanding Product Selectivity in Electrochemical Conversion of CO₂: A Combined in Situ Experimental and Theoretical Approach – Y. Katayama (Massachusetts Institute of Technology, Yamaguchi University) and Y. Shao-Horn (Massachusetts Institute of Technology)
- 09:00 946 *(Invited)* Boron Nitride Nanosheets Decorated with Small Gold Nanoparticles (~ 5 nm) of Narrow Size Distribution on Gold Substrate As an Efficient Electrocatalyst for Oxygen Reduction to Water – K. Uosaki, G. Elumalai (National Institute for Materials Science), H. Noguchi (National Institute for Materials Science, Hokkaido University), and H. C. Dinh (National Institute for Materials Science) Electrochemical Reduction of Carbon Dioxide with Nitrogen-Doped Copper Nanoparticles – S. Chen and G. Chen (Honda Research Institute USA Inc.)
- 09:40 Break

Nanostructure 5 – 10:00 – 12:00

Co-Chairs: Hideki Masuda and Matthew C. Beard

- 10:00 948 *(Invited)* Fabrication of Ordered Semiconductor Nanostructures for Energy Conversion Based on Anodization Processes – H. Masuda, T. Kondo, and T. Yanagishita (Tokyo Metropolitan University)
- 10:20 949 *(Invited)* Controlling the Properties of Colloidal Quantum Dots for Energy Conversion Applications – M. C. Beard (National Renewable Energy Laboratory)
- 10:40 950 *(Invited)* Acceleration of Electrocatalytic Reaction By Photoexciting Localized Surface Plasmon of Octahedral Au@Pt Core-Shell Nanoparticles – T. Kameyama, K. Sato, and T. Torimoto (Graduate School of Engineering, Nagoya University)
- 11:00 951 *(Invited)* Fast CO₂ Sorption Kinetics Using Nanowire Based Materials – M. K. Sunkara (Conn Center for Renewable Energy Research), A. Nambo, V. Atla (University of Louisville), and M. Zain (Chinese Academy of Sciences)
- 11:20 952 Sensitization of p-Gap Photocathodes – S. Maldonado (University of Michigan)
- 11:40 953 Organic Photovoltaic Switches Using DBP/C₆₀ Cells and Blue Light to Trigger Logic and Amplifier Electronics – J. Ahn, J. Y. Lim, S. Park, and S. Im (Yonsei University)

pi-System Figuration 2 – 14:40 – 16:20

Co-Chairs: Shu Seki and Manabu Sugimoto

- 14:40 954 *(Invited)* Nanoscale Electrocrystallization: A Site-Selective Electrochemical π -Figuration of Nanocrystals for Electronic Devices – H. Hasegawa (Nat'l Inst. of Information and Comms. Tech.)
- 15:00 955 *(Invited)* A Role of Graphene Fabricated on Surfaces of Metal Halide Perovskite Compounds. A First-Principles Study – M. Sugimoto (Kumamoto University)
- 15:20 956 *(Invited)* Configuration of Organic Conjugated Molecular/Polymer Systems at the Interfaces and Under High Pressure: Non-Contact Assessment By Microwave Electrical Conductivity Measurements – S. Seki (Kyoto University)

- 15:40 957 *(Invited)* Thermoelectric Properties of π -Conjugated Polymers in Ionic-Liquid-Gated Transistors – H. Tanaka and T. Takenobu (Nagoya University)
- 16:00 958 *(Invited)* Full Atomistic Kinetic Monte Carlo with Direct Counting Approach for Ion Dynamics in Electrochemical Cells – T. Tada (Tokyo Institute of Technology)

F02

Multiscale Modeling, Simulation and Design – From Conventional Methods to the Latest in Data Science

Industrial Electrochemistry and Electrochemical Engineering / Energy Technology
Room 619, Washington State Convention Center

Multiscale Modeling- Fuel Cells – 08:00 – 12:20

Co-Chairs: Michael A. Lowe and Gerardine G. Botte

- 08:00 1358 *(Invited)* Experimentally and Theoretically Determining Reaction Pathways for the Alkaline Hydrogen Electrode and Their Implications on Catalyst Design – M. H. M. Tang, J. D. Snyder, and S. Intikhab (Drexel University)
- 08:40 1359 Physical-Statistical Modeling and Analyses of Catalyst Degradation in PEM Fuel Cells – H. A. Baroody (Simon Fraser University, Ballard Power Systems), D. Stolar (Ballard Power Systems), and M. H. Eikerling (Simon Fraser University, Dept. Chemistry)
- 09:00 1360 Nonlinear Impedance Spectra Analysis of CO Poisoning on PEM Fuel Cell Performance – R. Pachimatla (Indian Institute of Technology Madras) and R. Srinivasan (Indian Institute of Technology, Madras)
- 09:20 1361 A Multiscale Method for Multiphase Pore-Scale Simulation of the Polymer Electrolyte Fuel Cell Catalyst Layer – W. Zheng and S. H. Kim (The Ohio State University)
- 09:40 Break
- 10:00 1362 *(Invited)* Multiscale Modeling of Transport Phenomena in Ion-Conducting Membranes and Aqueous CO₂ Reduction Cells – A. Z. Weber (Lawrence Berkeley National Laboratory), A. R. Crothers (University of California, Berkeley), M. Singh (University Illinois, Chicago), C. J. Radke (Lawrence Berkeley National Laboratory), and A. T. Bell (University of California, Berkeley)
- 10:40 1363 *(Invited)* Bridging Long Temporal Scales: Durability Analysis of Electrochemical Systems – T. F. Fuller (Georgia Institute of Technology)
- 11:20 1364 Water Phenomena in PEFCs As the Origin of the Pt Loading Effect: A Comprehensive Modelling Study – T. A. Muzaffar (Department of Chemistry, Simon Fraser University) and M. H. Eikerling (Simon Fraser University, Dept. Chemistry)
- 11:40 1365 Two Phase Flow Modeling and Characterization of Oxygen Bubbles in PEM Water Electrolysis Cells – A. Nouri-Khorasani, J. T. H. Kwan, A. Bonakdarpour, and D. P. Wilkinson (University of British Columbia)
- 12:00 1366 Thermodynamics of Bubble Nucleation – K. J. Vachaparambil and K. E. Einarsrud (Norwegian University of Science and Technology)

Session 3 – 08:00 – 12:40

Co-Chair: John A. Staser

- 08:00 1624 Applying Battery Tuning Method on Metal Oxide for Highly Selective CO₂ Reduction – K. Jiang and H. Wang (Rowland Institute, Harvard University)
- 08:20 1625 Enhanced CO₂ Electrochemical Conversion at Bi-Modified Pb Foams – D. Guay, M. Fan, S. Garbarino (INRS-EMT), G. A. Botton (McMaster University), and A. C. Tavares (INRS-EMT)
- 08:40 1626 Electrochemical Reduction of CO₂ at Multi-Metallic Nano-Interfaces – S. Rasul (Newcastle University), A. Pugniant (Newcastle University, Phelma, Grenoble-INP, France), and E. Yu (School of Engineering, Newcastle University)
- 09:00 1627 Electrodeposition of Ag Catalysts for Electrochemical CO₂ Reduction – Y. Ham (Seoul National University), M. J. Kim (Duke University), T. Lim (Soongsil University), S. K. Kim (Chung-Ang University), and J. J. Kim (Seoul National University)
- 09:20 1628 Engineered Electrolyte-Electrocatalyst Nanocomposites for Enhanced CO₂ Electroreduction – R. A. Elgammal (University of Tennessee, Knoxville) and T. A. Zawodzinski (University of Tennessee, Knoxville, Oak Ridge National Laboratory)
- 09:40 1629 Electrochemical Reduction of CO₂ Facilitated By Vitamin-Based Catalysts – M. Budanović, R. D. Webster, D. Urbancok, and Y. H. J. Er (Nanyang Technological University)
- 10:00 Break
- 10:10 1630 Catalysts for CO₂ Electroreduction to Hydrocarbons and Oxygenates – U. Nwabara (University of Illinois at Urbana-Champaign, WPI-I2CNER Kyushu University), S. Verma (WPI-I2CNER Kyushu University, University of Illinois at Urbana-Champaign), A. A. Gewirth (University of Illinois), and P. J. A. Kenis (Int Inst for Carbon-Neutral Energy Research (WPI-I2CNER), University of Illinois at Urbana-Champaign)
- 10:30 1631 Effective Strategies for Reducing Carbon Monoxide into Liquid Fuels By Copper Catalysts – L. Wang (Stanford University), S. A. Nitopi (Stanford University Department of Chemical Engineering), M. Orazov, C. Morales-Guio (Stanford University), C. Hahn (SLAC National Accelerator Laboratory), and T. F. Jaramillo (Stanford University)
- 10:50 1632 Implications of Transport and pH Effects on Electrocatalytic CO₂ Reduction – S. Ringe (Stanford University, SLAC National Accelerator Laboratory), K. Chan (SLAC National Accelerator Laboratory), and J. Nørskov (Stanford University)

- 11:10 1633 In-Situ Studies of Carbon Removal from Ni-YSZ Anodes Using Mixtures of O₂ and H₂ – S. Tsoi (U.S. Naval Research Laboratory), W. A. Maza (U.S. Naval Research Laboratory, National Research Council), J. D. Kirtley (Washington State University), D. A. Steinhurst (Nova Research, Inc.), R. A. Walker (Montana State University), and J. C. Owrutsky (U.S. Naval Research Laboratory)
- 11:30 1634 Understanding Electrocatalytic Hydrogenation of Phenol and Benzaldehyde on Platinum Group Metals for Fuel Production – N. Singh (University of Washington, Pacific Northwest National Laboratory), U. Sanyal (Pacific Northwest National Laboratory), G. Ruehl (University of Washington), J. Fulton, D. Camaioni, O. Y. Gutiérrez Tinoco (Pacific Northwest National Laboratory), C. Campbell (University of Washington), and J. A. Lercher (Technische Universität München)
- 11:50 1635 Designing Smart Materials for Efficient Electrosynthesis of Fuels and Environmental Remediation: The Story of Transition Metal Chalcogenides – M. Nath, J. Masud, A. T. Swesi, M. Nath (Missouri University of Science & Technology), U. De Silva (Missouri University Science & Technology), W. P. R. Liyanage, S. Umapathi, and B. Golrokh Amin (Missouri University of Science & Technology)
- 12:10 1636 (Invited) CoFe₂O₄@CNTs As High-Performance Air-Cathode Bifunctional Catalysts for Rechargeable Zinc-Air Batteries – N. Xu, L. Peng, J. Qiao (Donghua University), and X. D. Zhou (University of South Carolina)

Oxygen or Hydrogen Evolution Catalysis for Water Electrolysis 4

Energy Technology / Industrial Electrochemistry and Electrochemical Engineering / Physical and Analytical Electrochemistry
Room 606, Washington State Convention Center

Hydrogen Evolution Reaction 2 – 08:00 – 11:25

Co-Chairs: Hui Xu and Yuyan Shao

- 08:00 Introductory Remarks
- 08:05 1705 (Invited) Electrocatalytic Hydrogen Evolution in Neutral Solution – Y. Shao (Pacific Northwest National Laboratory)
- 08:35 1706 MoTe₂ Rendered into an Efficient and Stable Electrocatalyst for the Hydrogen Evolution Reaction By Polymorphic Control – J. C. McGlynn, I. Cascallana-Matias, J. Fraser, I. Roger, J. McAllister, H. Miras, M. Symes, and A. Ganin (University of Glasgow)
- 08:55 1707 Effect of Co-Generated MoO₃ on the Electrocatalytic Hydrogen Evolution Performance of O₂ Plasma Modified MoS₂ – C. Zhang, L. Jiang, J. Hu (Kunming University of Science and Technology), M. K. H. Leung (City University of Hong Kong), and Y. Zhang (Kunming University of Science and Technology)

- 09:15 1708 Investigating the Doping Effect of Single Transition Metal Atoms on Basal Planes of MoS₂ Monolayer Nanosheets for Electrochemical Hydrogen Evolution Reaction – H. M. Lau, X. W. Lu, J. Kulhavý, S. Wu (Department of Chemistry, University of Oxford, UK), L. L. Lu (Wuhan University of Science and Technology, China), T. S. Wu (National Tsing Hua University, Taiwan), R. Kato (National Institute of AIST, Tsukuba, Japan), J. S. Foord (Department of Chemistry, University of Oxford, UK), Y. L. Soo (National Tsing Hua University, Taiwan), S. Kazu (National Institute of AIST, Tsukuba, Japan), and S. C. E. Tsang (Department of Chemistry, University of Oxford, UK)
- 09:35 1709 MoS₂ Decorated on Different Metal Oxide Nanotubular Structures with a High Density of Reactive Sites for HER Reactions – X. Zhou (Friedrich-Alexander University), B. Jin, M. Yang (Harbin Institute of Technology), and P. Schmuki (University of Erlangen-Nuremberg)
- 09:55 1710 Understanding the Improved Kinetics of the Hydrogen Evolution/Oxidation Reactions of the Platinum-Oxophilic Metal Systems in Alkaline Media – Q. Jia, J. Li (Northeastern University), and S. Mukerjee (Chemistry and Chemical Biology, Northeastern University)
- 10:15 1711 Bioinspired Mo₂C-Based Catalyst with the Optimized P and S Heteroatom Incorporation for Efficient Hydrogen Production in Alkaline Media – T. Ahn and U. Sim (Chonnam National University)
- 10:35 1712 Electrocatalytic Activity of Amorphous Ni-Nb-Y Alloys for the HER in Alkaline Water Electrolysis – S. Ghobrial, S. J. Thorpe, and D. W. Kirk (University of Toronto)
- 10:55 1713 Ruthenium Cobalt Phosphide Hybrid Clusters with Exceptional Hydrogen Evolution Performance in Both Acidic and Alkaline Electrolytes – L. Liu (International Iberian Nanotechnology Laboratory (INL)) and J. Xu (International Iberian Nanotechnology Laboratory)
- 11:15 Intermission

Tutorials: Theory/Modeling – 11:25 – 12:35

Co-Chairs: Gang Wu and Hui Xu

- 11:25 1714 *(Invited)* Water Adsorption on Transition Metal Oxide Pure IrO₂, RuO₂ and Alloy Ru_xIr_{1-x}O₂(110) Surfaces Investigated By Density Functional Theory – L. Oliveira (University of Washington), A. A. Franco (LRCS (CNRS&UPJV), RS2E, ALISTORE-ERI), and D. Loffreda (Laboratoire de Chimie, Ecole Normale Supérieure de Lyon)
- 11:55 1715 Understanding the Hydrogen and Oxygen Evolution Reactions through Microkinetic Models – A. T. Marshall and A. Herritsch (University of Canterbury)
- 12:15 1716 Understanding and Designing Oxygen Reduction/Evolution Reaction (ORR/OER) Catalysts By Combining Experimental and Ab-Initio Studies – M. H. Seo (Korea Institute of Energy Research), M. G. Park, D. U. Lee, X. Wang (University of Waterloo), S. M. Choi (Korea Institute of Materials and Science), B. Han (Yonsei University), and Z. Chen (University of Waterloo)

104 Materials for Low Temperature Electrochemical Systems 4

Energy Technology / Industrial Electrochemistry and Electrochemical Engineering / Physical and Analytical Electrochemistry
Room 611, Washington State Convention Center

Fuel Cell Characterization 3 – 08:00 – 09:40

Co-Chairs: Jakub Drnec and Jasna Jankovic

- 08:00 1815 Current and Temperature Distribution Measurement in a Polymer Electrolyte Membrane Water Electrolyzer Cell – F. Zhou, S. Al Shakhshir, and S. K. Kær (Department of Energy Technology, Aalborg University)
- 08:20 1816 Advanced Characterization and Quantification of Fuel Cell Electrodes Using Electron and X-Ray Microscopy Techniques – J. Jankovic, D. Susac, A. M. V. Putz (AFCC Automotive Fuel Cell Cooperation Corp.), A. Kneer (Daimler AG), and S. Zhang (DigiM Solution LLC)
- 08:40 1817 Full Characterization of an Operating Fuel Cell Using High Energy X-Rays – I. Martens (University of British Columbia), J. Pusa (University of Helsinki, Aalto University), M. V. Blanco (European Synchrotron Radiation Facility (ESRF)), A. Vamvakeros, S. Jacques (Finden Ltd.), H. Isern, V. Honkimäki (European Synchrotron Radiation Facility (ESRF)), and J. Drnec (European Synchrotron Radiation Facility)
- 09:00 1818 Neutron Radiographic Investigations on the Effect of Hydrophobicity Gradients within MPL and MEA on Liquid Water Distribution and Transport in PEMFCs – A. Mohseninia, D. Kartouzian (Zentrum für Sonnenenergie- und Wasserstoff-Forschung), H. Markötter, U. U. Ince (Helmholtz-Zentrum Berlin), J. Scholta (Zentrum für Sonnenenergie- und Wasserstoff-Forschung), and I. Manke (Helmholtz-Zentrum Berlin)
- 09:20 1819 Use of Embedded Electrodes to Resolve Anode and Cathode Electrode Impedance in Proton Exchange Membrane Fuel Cells – A. L. Szendrei, T. Sparks (University of Utah), and A. V. Virkar (The University of Utah)

105 Renewable Fuels via Artificial Photosynthesis or Heterocatalysis 3

Energy Technology / Organic and Biological Electrochemistry / Physical and Analytical Electrochemistry
Room 612, Washington State Convention Center

Solar Water Splitting 3 – 08:00 – 12:30

Co-Chairs: Scott Kevin Cushing, Renata Anna Solarska, and Heli Wang

- 08:00 1898 Integrating Ab-Initio Simulations and Experimental Characterization Methods for Understanding Chemistry at Complex Photoelectrochemical Interfaces – T. A. Pham (Lawrence Livermore National Laboratory), X. Zhang (University of Notre Dame), B. C. Wood (Lawrence Livermore National Laboratory), S. Ptasinaka (University of Notre Dame), and T. Ogitsu (Lawrence Livermore National Laboratory)
- 08:15 1899 Noble-Metal-Free Photocatalytic Hydrogen Evolution Activity: Defect Engineering in TiO₂ Nanotubes – X. Zhou (Friedrich-Alexander University) and P. Schmuki (King Abdulaziz University, University of Erlangen-Nuremberg (FAU))

08:30	1900	Tuning Morphology and Defect Density in Self-Assembled Thin-Films of Solvent-Exfoliated WSe ₂ for Photoelectrochemical Hydrogen Production – X. Yu and K. Sivula (Ecole Polytechnique Federale de Lausanne)	11:15	1910	Defect-Pairs of Titanium and Carbon in Iron Oxide Film for Efficient Visible Light Driven Water Splitting – I. Y. Choi (Pohang University of Science and Technology (POSTECH)), D. Kim (Korea Institute of Science and Technology (KIST)), T. H. Jeon, B. G. Chae (Pohang University of Science and Technology (POSTECH)), K. S. Lee (Pohang Accelerator Laboratory (PAL)), C. G. Park, W. Choi (Pohang University of Science and Technology (POSTECH)), S. S. Han (Korea Institute of Science and Technology (KIST)), and J. K. Kim (Pohang University of Science and Technology (POSTECH))
08:45	1901	Solar-to-Hydrogen Efficiency: Shining Light on Photoelectrochemical Device Performance – J. L. Young (National Renewable Energy Laboratory), H. Döscher (Philipps-Universität Marburg), J. F. Geisz, J. A. Turner, and T. G. Deutsch (National Renewable Energy Laboratory)	11:30	1911	Three-Dimensional Tin Oxide Nanohelix Structures with Thin Iron Oxide Layer for Efficient Visible Light Driven Water Splitting – I. Y. Choi, T. H. Jeon, B. G. Chae, D. Y. Kim, C. G. Park, W. Choi, and J. K. Kim (Pohang University of Science and Technology (POSTECH))
09:00	1902	Photo-Assisted High Efficiency Low-Cost Hydrogen Generation – W. Wang, D. Lu, Y. Shao, Q. Huang, and L. Yan (Pacific Northwest National Laboratory)	11:45	1912	Large Band Gap Photoabsorbers for Tandem Water Splitting Devices – A. Crovetto, K. Kuhar, P. C. K. Vesborg, O. Hansen, M. Pandey, K. Jacobsen, K. Thygesen, I. Chorkendorff, and B. Seger (Technical University of Denmark)
09:15	1903	Titanium Nitride As a Conducting Interfacial Layer between Hydrogen Evolution Catalysts and Silicon Photocathodes for Stable Solar-to-Hydrogen Water Splitting Devices – S. Hwang, A. B. Laursen, S. H. Porter, Y. Hongbin, M. Li, V. Manichev, K. U. D. Calvino, V. Amarasinghe, M. Greenblatt, E. Garfunkel, and G. C. Dismukes (Rutgers University)	12:00	1913	Development of a New Fabrication Route for High Quality Visible-Light-Driven Photocatalysts; Atmosphere Controlled Flux Growth for Oxynitride and Nitride Crystals – S. Suzuki, M. Yanai, M. Komatsu, H. Saito (Department of Materials Chemistry, Shinshu University), T. Hisatomi (The University of Tokyo), S. Oishi (Department of Materials Chemistry, Shinshu University, Nagano Prefecture Nanshin Institute of Technology), K. Domen (The University of Tokyo, Center for Energy & Environ. Sci., Shinshu University), and K. Teshima (Department of Materials Chemistry, Shinshu University, Center for Energy & Environ. Sci., Shinshu University)
09:30		Break			
09:45	1904	Nanoelectrode Atomic Force Microscopy Probes Enable the in-Operando Measurement of Surface Electrochemical Potentials during Oxygen Evolution Catalysis – M. R. Nellist, F. A. L. Laskowski, J. Qiu, and S. W. Boettcher (University of Oregon)	12:15	1914	Conjugated Polymer Nanosheets for Photocatalytic Overall Water Splitting – H. Xu (University of Science and Technology of China)
10:00	1905	Electrospinning to Prepare Nanostructured Photocatalysts and Photoelectrodes – M. Einert, A. Bloesser, and R. Marschall (Justus-Liebig-University Giessen)			
10:15	1906	Development of Best Practices and Standard Protocols in Benchmarking Photoelectrochemical (PEC) Hydrogen Production – C. Xiang (Joint Center for Artificial Photosynthesis, Caltech)			
10:30	1907	Electrochemical Synthesis of Nanoporous Hematite (α -Fe ₂ O ₃) and Their Applications Towards Photocatalytic Water Oxidation – M. Hasan, E. Hadzifejzovi (Department of Chemistry, University of Oxford, UK), J. F. Rohan (Tyndall National Institute, UCC, Ireland), and J. S. Foord (Department of Chemistry, University of Oxford, UK)			
10:45	1908	Study of the Water Splitting Performance of Hematite Thin Films Prepared By DC and Reactive RF Sputtering – R. Sinha (Dutch Institute for Fundamental Energy Research), R. Lavrijsen (Eindhoven University of Technology (TU/e)), M. C. M. van de Sanden (Dutch Institute for Fundamental Energy Research, Eindhoven University of Technology (TU/e)), and A. Bieberle-Hütter (Dutch Institute for Fundamental Energy Research)			
11:00	1909	Hydrogen Evolution at Conjugated Polymer Nanoparticle Electrodes – P. Fortin and S. Holdcroft (Simon Fraser University)			
					Metal Oxide Photocatalysts – 13:40 – 15:30
					Co-Chairs: Pawel J. Kulesza and Jae-Joon Lee
			13:40	1915	Effects of Enhanced Hole Mobility on Electrochemically Synthesized p-Type CuAlO ₂ Films for Photoelectrochemical Hydrogen Production from Water – S. Y. Choi and H. Park (School of Energy Engineering, Kyungpook National University)
			13:55	1916	Photoelectrochemical Activity of CdS/CdSe-Deposited TiO ₂ photoanodes Due to Electrolytes with and without Sacrificial Reagents – R. Ahmed, Y. Xu, and G. Zangari (University of Virginia)
			14:10	1917	Electrodeposited Thin Conformal TiO ₂ Coating Enabling Stable Operation of BiVO ₄ Photoanodes in Basic Media – D. Lee and K. S. Choi (University of Wisconsin-Madison)
			14:25	1918	Highly Aligned Oxide Nanotubes: Engineering Reactive Centers for Photocatalysis – P. Schmuki (University of Erlangen-Nuremberg), X. Zhou, N. Liu (University of Erlangen-Nuremberg (FAU)), and M. Altomare (University of Erlangen-Nuremberg)

- 14:40 **1919** Transition-Metal Single Atom Catalysts for Highly Efficient Artificial Photosynthesis – H. Wang (Rowland Institute, Harvard University)
- 14:55 **1920** In-Situ Growth of Polymeric Carbon Nitride Films for Efficient Photoelectrochemical Water Splitting – C. Xue (Nanyang Technological University)
- 15:10 Break

Narrow Band Gap Semiconductors 2 – 15:30 – 17:45
Co-Chairs: Jae-Joon Lee and Pawel J. Kulesza

- 15:30 **1921** Full Solar Spectrum Photocatalytic H₂ Production Base on Polynary Composite – J. Zhang (Beihang University)
- 15:45 **1922** Photoelectrochemical Properties of Surface-Modified ZnSe:Cu(In,Ga)Se₂ Photocathodes for Efficient and Durable Overall Water Splitting – H. Kaneko, T. Minegishi, and K. Domen (The University of Tokyo)
- 16:00 **1923** Operational Characteristics and Failure Modes of Protected Si Anodes for Sunlight-Driven Water Oxidation – K. Papadantonakis, K. Sun, and N. S. Lewis (California Institute of Technology)
- 16:15 **1924** Stable Silicon-Based Sandwich Photoelectrode for Efficient Solar Hydrogen Evolution – C. Cheng, K. Du, Z. Zhang (IMS, University College of Southeast Norway), G. Li (MNSRC, Taiyuan University of Technology), and K. Wang (IMS, University College of Southeast Norway)
- 16:30 **1925** PbI₂ Thin-Films for Photoelectrochemical Hydrogen Evolution – D. Fermin (School of Chemistry, University of Bristol) and D. Tiwari (University of Bristol)
- 16:45 **1926** Photolytic Water Splitting By Surface-Conditioned n-Gallium Phosphide(100) Photoanodes – W. Saddique, G. Lilienkamp, and W. Daum (IEPT, TU Clausthal)
- 17:00 **1927** Electrochemical Pulsing Deposition of CTZS (Optical and Structural properties) Solar Energy Applications – M. A. Saeed (A'Sharqiyah University)
- 17:15 **1928** Stable All Solid State Z-Scheme Based TiO₂/M/Cd_xZn_{1-x}S Photo-Catalysts for Efficient Hydrogen Generation – T. T. Isimjan (Saudi Arabia Basic Industries Corporation)
- 17:30 **1929** Wide-Bandgap Cuga(S,Se)₂ As Top Cell Photocathodes for Tandem Water Splitting Devices – A. D. DeAngelis, K. Horsley, and N. Gaillard (University of Hawaii)

K03

Oxidation and Reduction: Exploring Electron Transfer Reactions in Chemistry and Biology

Organic and Biological Electrochemistry / Physical and Analytical Electrochemistry
 Room 616, Washington State Convention Center

Session 3 – 08:00 – 11:40

Co-Chairs: Andrew J. Boydston and Song Lin

- 08:00 **2080** Redox Catalysis for Biomass Degradation – C. Stephenson, G. Magallanes, C. Yang, M. Kaerkaes, and I. Bosque (University of Michigan)
- 08:40 **2081** Electrocatalysis by Soluble *Pyrococcus furiosus* [NiFe]-Hydrogenase and its Hydrogenase Subcomplex: Tuning the Catalytic Bias – A. K. Jones and Z. K. Nazemi (Arizona State University)
- 09:00 Break

- 09:20 **2082** Difunctionalization of Cyclopropylanilines and Cyclobutylanilines – N. Zheng, J. Wang, and E. Boateng (University of Arkansas)
- 09:40 **2083** TiO₂ Photocatalysis in the Aromatic “Redox Tag”-Guided Intermolecular Formal [2 + 2] Cycloadditions – Y. Okada, N. Maeta, K. Nakayama, and H. Kamiya (Tokyo University of Agriculture and Technology)
- 10:00 **2084** Enhancing Analytical Potential of Electrochemiluminescence By the Silica Nanoparticle Approach – G. Valenti, M. Marcaccio (Dipartimento di Chimica - Università di Bologna), E. Rampazzo, S. Kesarkar, L. Prodi (Department of Chemistry), and F. Paolucci (Dipartimento di Chimica - Università di Bologna)
- 10:20 Break
- 10:40 **2085** Cycloaddition Reaction Assisted By Photoinduced Electron Transfer in a Lithium Perchlorate-Nitromethane System – S. Nagahara, H. Wakamatsu (Tokyo University of Agriculture and Technology), Y. Okada (Tokyo Univ. of Agric. & Technol.), and K. Chiba (Tokyo University of Agriculture and Technology)
- 11:00 **2086** Electrochemical Oxidation/Modification of Lignin Mediated By Aminoxyl Radicals – M. Rafiee (University of Wisconsin-Madison) and S. S. Stahl (University of Wisconsin - Madison)
- 11:20 **2087** Electrochemical Studies of L-Histidine – D. C. Clark and G. T. Cheek (United States Naval Academy)

Session 4 – 13:00 – 16:40

Co-Chairs: Hubert H. Girault and Jun-ichi Yoshida

- 13:00 **2088** TEMPO-Based Organocatalyst Design – D. P. Hickey, M. S. Sigman, and S. D. Minter (University of Utah)
- 13:40 **2089** Electrocatalytic Difunctionalization of Alkenes – S. Lin (Cornell University)
- 14:00 Break
- 14:20 **2090** Electrochemical Analysis of Circulating Nucleic Acids for Liquid Biopsy – S. Kelley and J. Das (University of Toronto)
- 14:40 **2091** Field-Driven Odor Mitigation in Sanitation Facilities – M. M. Vasquez, E. Ngaboyamahina (Duke University), C. A. De March, M. Do, H. Matsunami (Duke University School of Medicine), and J. T. Glass (Duke University)
- 15:00 **2092** Thermally Activated Redox Conduction in *Shewanella Oneidensis* MR-1 Biofilms – S. Xu and M. El-Naggar (University of Southern California)
- 15:20 Break
- 15:40 **2093** Mechanistic Studies on Photoredox-Mediated Organocatalyzed Ring-Opening Metathesis Polymerization – A. J. Boydston (University of Washington)
- 16:00 **2094** Electroorganic Oxidation of Pyridones – D. D. Rodene, N. R. Gade, J. Jee, T. D. Roper, and R. B. Gupta (Virginia Commonwealth University)
- 16:20 **2095** Electrochemical Activation of the Tetrazine Ligation for Surface Modification – N. Devaraj (University of California)

Oxidation Reactions – 08:00 – 12:00**Co-Chairs: Wen-Bin Cai, Andrzej Kowal, and Hiroshi Inoue**

- 08:00 2218 *(Invited)* Difficulties in Synthesis of Effective Ternary Catalysts for Ethanol Oxidation – A. Kowal (Institute of Nuclear Physics Polish Academy of Sciences, ELCATAK, 30-216 Krakow, Poland), G. Gruzel, and M. Parlinska-Wojtan (Institute of Nuclear Physics Polish Academy of Sciences)
- 08:20 2219 *(Invited)* Kinetic Characterization of Ir, Pt, and IrPt-Alloy Nanocatalysts for Ammonia Oxidation Reaction – J. X. Wang (Brookhaven National Laboratory), L. Song (Brookhaven National Laboratory), Z. Liang (Chemistry Department, Brookhaven National Laboratory), Y. Zhang (Brookhaven National Laboratory, Chemistry Department), and R. R. Adzic (Chemistry Department, Brookhaven National Laboratory)
- 08:40 2220 *(Invited)* Playing Around with Shape and Composition of Nanoparticles As Catalysts for Ethanol Oxidation – M. Parlinska-Wojtan, G. Gruzel, E. Drzymala, J. Depciuch (Institute of Nuclear Physics Polish Academy of Sciences), and A. Kowal (ELCATAK, 30-216 Krakow, Poland, Institute of Nuclear Physics Polish Academy of Sciences)
- 09:00 2221 *(Invited)* Developing Electrocatalysts for Ethanol Oxidation Reaction in Alkaline Media – W. B. Cai (iChEM and Department of Chemistry, Fudan University)
- 09:20 2222 *(Invited)* Advancements in Ethanol Oxidation Reaction Mechanisms with Alkaline Direct Ethanol Fuel Cells – R. Chen (University of Toledo) and J. Guo (Tremont Technology)
- 09:40 Break
- 10:00 2223 *(Invited)* Pt/Rh/SnO₂ Catalysts for Selective Ethanol Oxidation Reaction to CO₂ – H. Inoue, M. Chiku, and E. Higuchi (Osaka Prefecture University)
- 10:20 2224 Understanding Reaction Mechanisms Using Dynamic Electrochemical Impedance Spectroscopy: Methanol and Formic Acid Oxidation – T. Holm (The University of British Columbia, University of Victoria), P. K. Dahlström (Statoil ASA, Norwegian University of Science and Technology), S. Sunde, F. Seland (Norwegian University of Science and Technology), and D. A. Harrington (University of Victoria)
- 10:40 2225 Synthesis of Nanostructured Bimetallic Catalysts for Electrochemical Applications – J. Chen (University of Arkansas)
- 11:00 2226 Electrooxidation of Propylene to Acrolein – B. Seger, A. Winiwarter (Technical University of Denmark), I. Stephens (Imperial College London), and I. Chorkendorff (Technical University of Denmark)
- 11:20 2227 Pt Acts As a Catalyst to Activate RuO₂: The Active Sites of RuO₂ Co-Catalyst for the CO Oxidation – W. Sugimoto, P. Y. Olu, and D. Mochizuki (Shinshu University)

- 11:40 2228 Oxygen-Tolerant Electrodes with Single-Atom Platinum Modified Covalent Triazine Frameworks for the Hydrogen Oxidation Reaction – K. Kamiya (Osaka University, JST-PRESTO), R. Kamai (Eco Solutions Company, Panasonic Corporation), K. Hashimoto (Institute for Materials Science), and S. Nakanishi (Osaka University)

HER, OER and CO₂ Reduction – 14:00 – 17:30**Co-Chairs: Wenchao Sheng and Svetlana Strbac**

- 14:00 2229 *(Invited)* Electrocatalysis of Hydrogen Evolution on Single Crystal Gold Electrodes Decorated By Palladium and Rhodium Nanoislands – S. Strbac (ICTM-Institute of Electrochemistry)
- 14:20 2230 Electrochemical CO₂ Reduction on Oxide-Derived Cu Surface with Various Oxide Thicknesses – Z. Liang (Chemistry Department, Brookhaven National Laboratory), J. Fu (Dept. Chem. and Bio. Eng., Zhejiang Un. China), M. B. Vukmirovic, and R. R. Adzic (Chemistry Department, Brookhaven National Laboratory)
- 14:40 2231 Electrochemical Reduction of Aqueous CO₂ to Synthesis Gas Using β Palladium Hydride – W. Sheng (Tongji University), S. Kattel, S. Yao (Brookhaven National Laboratory), and J. G. Chen (Columbia University)
- 15:00 2232 Engineering Stepped Edge Surface Structures of MoS₂ Sheet Stacks to Accelerate the Hydrogen Evolution Reaction – J. Hu (Kunming University of Science and Technology), B. Huang (The Hong Kong Polytechnic University), C. Zhang (Kunming University of Science and Technology), and S. Yang (The Hong Kong University of Science and Technology)
- 15:20 2233 Metal Ion Cycling of Cu Foil for Selective C-C Coupling in Electrochemical CO₂ Reduction – K. Jiang (Rowland Institute, Harvard University), R. Sandberg (Stanford University), K. Chan (SLAC National Accelerator Laboratory), and H. Wang (Rowland Institute, Harvard University)
- 15:40 Break
- 16:00 2234 Understanding the Effects of pH and Alkali Metal Cations on H/OH Adsorption and the Hydrogen Oxidation/Evolution Reaction on Transition Metal Electrodes – I. T. McCrum, X. Chen (Leiden University), P. Meduri, M. A. Hickner, M. J. Janik (The Pennsylvania State University), and M. T. M. Koper (Leiden University)
- 16:20 2235 Tunable and Efficient Tin Modified Nitrogen-Doped Carbon Nanofibers for CO₂ Electroreduction – Y. Zhao (University of Wollongong), J. Liang, J. Ma (School of Physics and Electronics, Hunan University), C. Wang, and G. Wallace (University of Wollongong)
- 16:40 2236 Electrochemical Reduction of CO₂ to CO or Ethylene: Status of Electrocatalysis and Technoeconomic Insights – P. J. A. Kenis (Int Inst for Carbon-Neutral Energy Research (WPI-I2CNER))
- 17:00 2237 Modulating Selectivity in CER and OER through Doped RuO₂ – R. G. Pala, S. Saha, and K. Kishor (Indian Institute of Technology Kanpur)
- 17:20 Concluding Remarks

Biological Fuel Cells 8Physical and Analytical Electrochemistry / Energy Technology
Room 615, Washington State Convention Center**Microbial Fuel Cells – 08:00 – 12:40****Co-Chairs: Pierangela Cristiani, Plamen Atanassov, and Leonard M. Tender**

- 08:00 2254 Enhancing the Redox Conductance of Biofilms in Microbial Fuel Cells – C. Li and H. Liu (Oregon State University)
- 08:20 2255 3D-Printable Cathode Electrode for Monolithically Printed Microbial Fuel Cells (MFCs) – P. Theodosiou (University of the West Of England), J. Greenman, and I. Ieropoulos (University of the West of England)
- 08:40 2256 Electron Transfer Rates of Anodic Biofilms at Different Sizes – S. Tutar, A. Mohamed, P. T. Ha, and H. Beyenal (Washington State University)
- 09:00 2257 Non-Platinum Group Catalysts to Improve Performance of a Membraneless Microbial Fuel Cell – C. S. Swanson (University of Tennessee), Y. Ashraf Gandomi (Dep. of Mechanical Engineering, University of Tennessee), G. A. Goenaga (University of Tennessee-Knoxville), S. Medina (Colorado School of Mines), T. A. Zawodzinski Jr. (University of Tennessee-Knoxville), D. Aaron, and M. M. Mench (University of Tennessee)
- 09:20 2258 Field Testing of Floating Microbial Fuel Cells and Energy Harvesting Related Power Systems – P. Cristiani (CNR Institute of Biomolecular Chemistry), P. Bonelli (CISE 2007), A. Liberale (University of Pavia), M. Tucci (Università degli Studi di Milano), M. Papacchini (INAIL), and S. P. Trasatti (Università degli Studi di Milano)
- 09:40 Break
- 10:00 2259 Toward Practical Powering of Oceanographic Sensors By Benthic Microbial Fuel Cells – J. Book, J. Golden, I. Martens, A. Quaid, and L. M. Tender (Naval Research Laboratory)
- 10:20 2260 *In Situ* Development of Efficient Electrogenic Bacterial Community in Urine Fed Microbial Fuel Cell Cascades – O. Obata, X. A. Walter, J. Greenman, and I. Ieropoulos (University of the West of England)
- 10:40 2261 Design and Characterization of a Conductive Cellulose Nanocomposite Anode for Enhancement of Microbial Fuel Cell Efficiency – J. J. Keleher, T. J. Beckmann, J. E. Lambert III, K. P. Lanasky, and N. E. Yuede (Lewis University, Department of Chemistry)
- 11:00 2262 Passive Feeding in Paper-Based Microbial Fuel Cells – J. Winfield (University of the West of England), P. Milani (University of Milano), J. Greenman, and I. Ieropoulos (University of the West of England)
- 11:20 2263 Field Demonstration of Potentiostatically Enriched Microbial Fuel Cell Wastewater Treatment System – A. Mohamed, H. M. Zmuda (Washington State University), E. R. Coats (University of Idaho), and H. Beyenal (Washington State University)
- 11:40 2264 Optimising Microbial Fuel Cell Treatment of Wastewater through Electrode Configuration – I. Ieropoulos, O. Reddy, J. Winfield, and J. Greenman (University of the West of England)

- 12:00 2265 Modeling of Continuous Microbial Fuel Cell (CMFC) for Control Applications – A. Yewale, R. N. Methekar, and S. G. Agrawal (Visvesvaraya National Institute of Technology)
- 12:20 2266 Field Trial of Self-Stratifying Membrane-Less Microbial Fuel Cells Stacks in an Autonomous and Self-Powered Urinal – X. A. Walter, I. Merino-Jimenez, J. Greenman, and I. Ieropoulos (University of the West of England)

Oxygen Reduction ReactionsPhysical and Analytical Electrochemistry / Energy Technology
Room 602, Washington State Convention Center**Oxygen Reduction Reactions 12 – 08:10 – 10:00****Co-Chairs: Galina A. Tsirlina, Vito Di Noto, and Krzysztof Miecznikowski**

- 08:10 2354 Electrochemical Deoxygenation of Aqueous Solutions Using Symmetric Activated Carbon Electrodes in Flow-through Cells – N. Holubowitch (Texas A&M University - Corpus Christi), J. Landon (University of Kentucky Center for Applied Energy Research), X. Gao, K. Liu, and A. Omosebi (University of Kentucky)
- 08:30 2355 Electrochemical and Spectroscopic Characterization of Non-Precious Metal Fe-N-C ORR Catalysts Synthesized By Direct Flame Spray Pyrolysis – A. Poozhikunnath, H. Yu (Center for Clean Energy Engineering, University of Connecticut), L. J. Bonville (Center for Clean Energy Engineering), and R. Maric (Center for Clean Energy Engineering, University of Connecticut)
- 08:50 2356 Carbon Black Supported Highly Stable and Active Electrocatalysts for ORR in Polymer Electrolyte Membrane Fuel Cells – M. Rauf, Y. L. Li, J. L. Qu, P. X. Zhang, and H. W. Mi (Shenzhen University)
- 09:10 2357 Electrochemical Peroxide Generation for in Situ Disinfection – S. H. Vijapur, T. D. Hall, E. J. Taylor, D. Wang, S. Snyder, B. Skinn (Faraday Technology, Inc.), and C. R. Cabrera Jr. (University of Puerto Rico at Rio Piedras)
- 09:30 Break

Oxygen Reduction Reactions 13 – 10:00 – 12:00**Co-Chairs: Pawel J. Kulesza, Minhua Shao, and Iwona Agnieszka Rutkowska**

- 10:00 2358 Transition Metal-Based Catalysts on Stable and Corrosion-Resistant Supports for Oxygen Reduction Reaction – S. B. Cho, C. He, J. Parrondo, S. Sankarasubramanian, V. K. Ramani, and R. Mishra (Washington University in St. Louis)
- 10:20 2359 The Impact of *in Situ* Crystallization on Oxygen Surface Exchange Kinetics of Mixed Conducting Thin Film Oxygen Electrodes – T. Chen (WPI-I2CNER, Kyushu University, Dept. of Hydrogen Energy Systems, Kyushu University), G. F. Harrington (Kyushu University, Massachusetts Institute of Technology), K. Sasaki (wpi-I2CNER, Kyushu University), and N. H. Perry (Massachusetts Institute of Technology)
- 10:40 2360 A Comparative Study of Ligand Modification to Pt Surface for Enhanced ORR Catalyst Activity and Durability – M. Kobayashi (Toyota Motor Corporation, Toyota Research Institute of North America), K. Huang, M. Jones, T. Nagai, and H. Jia (Toyota Research Institute of North America)

11:00	2361	Improved Long Term Performance Stability of Sr-Fe-O Infiltrated LSM/YSZ Solid Oxide Fuel Cells Under High Steam and High Temperature – Y. Fan (AECOM, DOE National Energy Technology Laboratory), Y. Chen (National Energy Technology Laboratory, West Virginia University), H. Abernathy (AECOM, U.S. DOE National Energy Technology Laboratory), R. Pineault (DOE National Energy Technology Laboratory), X. Song (DOE National Energy Technology Laboratory, West Virginia University), J. Liu, K. Gerdes (U.S. DOE National Energy Technology Laboratory), S. Lee (U.S. DOE, National Energy Technology Laboratory, AECOM/GES), T. Kalapos (AECOM, DOE National Energy Technology Laboratory), T. Yang, and G. A. Hackett (U.S. DOE National Energy Technology Laboratory)	09:00	2464	Photo Sensitivity Enhanced By the Modulation of Oxide Thickness in MIS(p) Structure – H. Y. Chen and J. G. Hwu (National Taiwan University)
11:20	2362	Observing Growth and Dissolution of Cuprous By Liquid Cell TEM – Y. H. Lin, F. C. Chen, J. Y. Chen (Dep. Mater. Sci. and Eng., National Chiao Tung University), and W. W. Wu (Dep. of Materials Science and Engineering, NCTU)	09:20	2465	Pressure Sensor at Barometric Levels Using Ionized Gas – M. C. Stewart, X. Liu, J. D. Jones, and A. Leung (Simon Fraser University)
11:40	2363	Combined Experimental and Numerical Analysis of Surface-Modified Solid Oxide Fuel Cell Cathodes – T. Yang (U.S. DOE National Energy Technology Laboratory), S. Lee (AECOM, U.S. DOE, National Energy Technology Laboratory), Y. Lin (U.S. DOE, National Energy Technology Laboratory), W. Li (West Virginia University), J. Liu (U.S. DOE National Energy Technology Laboratory), X. Liu (West Virginia University, U.S. DOE National Energy Technology Laboratory), H. Abernathy (AECOM, U.S. DOE National Energy Technology Laboratory), and G. A. Hackett (U.S. DOE National Energy Technology Laboratory)	09:40		Break
			10:00	2466	Increasing the Efficiency of Amino Acids Detection By Electrochemical Methods on Amorphous Carbon Nitride a-CN _x Electrodes – M. Faure, F. Billon (CNRS and Sorbonnes University), I. Le Potier, A. M. Haghiri-Gosnet (CNRS and University of Paris-Saclay), B. Tribollet (CNRS-LISE), C. Deslouis (CNRS and Sorbonnes University), A. Pailleret (Sorbonne Universités LISE UMR CNRS-UPMC 8235), and J. Gamby (Univ. Paris-Sud, Université Paris-Saclay, CNRS)
			10:20	2467	(Invited) A Frequency Domain Optofluidics Dissolved Oxygen Sensor – B. Xiong, E. Mahoney (McMaster University), J. F. Lo (University of Michigan Dearborn), C. Chau, R. Selvaganapathy, and Q. Fang (McMaster University)
			10:50	2468	Defect Engineering: Polycrystalline TiO ₂ Nanofibers with H ₂ Plasma Treatment Tuning Grain to Grain Boundary Potential for Photochemical Antibacterial Agents – P. C. Pan (National Tsing Hua University), P. H. Lai, P. H. Yeh (Tamkang University), and L. J. Chen (National Tsing Hua University)
			11:10	2469	Simultaneous Electrochemical Determination of Purine and Pyrimidine Bases Using Cu Doped CeO ₂ Nanoparticles Modified Glassy Carbon Electrode – N. Lavanya, C. Sekar (Alagappa University), and G. Neri (University of Messina)
			11:30	2470	A Review of Electrochemical and Non-Electrochemical Approaches to Determining Oxide Concentration in Molten Fluoride Salts – B. Goh, F. Carotti, and R. O. Scarlat (University of Wisconsin - Madison)
			11:50	2471	Using Impedance Spectroscopy to Detect the Selective Sorption of Iodine By MOF ZIF-8 – L. J. Small and T. M. Nenoff (Sandia National Laboratories)
			12:10	2472	Magnetically Actuated Beating Cilia for Pre-Concentration of Bacteria – P. Hesketh, S. Hanasoge, A. Alexeev (Georgia Institute of Technology), M. Erickson (University of Georgia), and J. Xu (Georgia Tech Research Institute)

MO1

**Sensors, Actuators, and Microsystems
General Session**

Sensor

Room 303, Washington State Convention Center

Novel Materials and Detection Platforms – 08:00 – 12:30

Co-Chairs: Larry A. Nagahara and Ajit Khosla

08:00	2461	Hybrid Flexible Plasmonic SERS Substrate with Improved Assemblage of Ag@SiO ₂ Nanocubes on a Miniaturized Paper Platform – M. L. Mekonnen, C. H. C. Chen, W. N. Su (National Taiwan University of Science and Technology), and B. J. Hwang (National Synchrotron Radiation Research Center, National Taiwan University of Science and Technology)
08:20	2462	Impact of Praseodymium Content on the Structural and Sensing Characteristics of Sol-Gel Synthesized PrTi _x O _y Sensing Films – C. W. Wang, C. L. Chan (Chang Gung University), and T. M. Pan (Chang Gung University, Chang Gung Memorial Hospital)
08:40	2463	Sensing Selectivity Enhancement of Palladium Oxide Toward VOCs Using Characteristic Response Features below 250°C – I. K. Cheng (National Chiao Tung University), J. H. Wang (National Taiwan Normal University), C. Y. Lin, and F. M. Pan (National Chiao Tung University)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
A					
A C, Anithaa	2428 (M01, Wed)	Ahn, Dae-Hwan	1457 (H02, Mon)	Alvarez, Carlos	843 (B06, Tue)
Aaron, Douglas	13 (A01, Sun), 2257 (L03, Thu)	Ahn, Hyo-Sok	862 (B06, Tue)	Alvarez, Samuel	1228 (E02, Mon)
Abass, Monsur	331 (A03, Mon), 1079 (C01, Tue)	Ahn, Jinhyeok	534 (A03, Wed), 544 (A03, Wed)	Alves, Thomaz	1330 (F02, Tue)
Abbas, Syed Ali	284 (A03, Sun), 342 (A03, Mon)	Ahn, Jongtae	901 (B06, Thu), 953 (B07, Thu), 2623 (Z02, Wed), 2624 (Z02, Wed)	AlZahrani, Atif	831 (B06, Mon)
Abbott, Daniel	1676 (I03, Tue)	Ahn, Juhyeon	552 (A03, Wed)	Amanapu, Hari	1262 (E02, Wed)
Abdelal, Aysegul	1189 (D02, Mon)	Ahn, Junsung	1937 (I06, Mon)	Amarasinghe, Voshadhi	1903 (I05, Thu)
Abdelhafiz, Ali	856 (B06, Tue)	Ahn, Sang	1230 (E02, Mon)	Amato, Michele	1172 (D01, Wed)
Abdellaoui, Sofiene	1995 (I07, Mon), 2240 (L03, Wed), 2241 (L03, Wed)	Ahn, Shihyun	1419 (H01, Tue), 1421 (H01, Tue)	Amendola, Roberta	1131 (C02, Tue)
Abdi, Fatwa	1854 (I05, Mon)	Ahn, Taeyong	1711 (I03, Thu)	Amezawa, Koji	1957 (I06, Tue)
Abdolhosseinzadeh, Sina	2300 (L05, Mon)	Ahn, Wook	1798 (I04, Wed)	Amietszajew, Tazdin	2413 (M01, Tue)
Abdulhamied, Elmahdy	1001 (B08, Tue)	Ai, Chengying	2384 (L06, Tue)	Amin, Hatem	2331 (L05, Wed)
Abdulslam, Abdulfattah	839 (B06, Tue)	Ai, Yuanfei	1571 (H04, Wed), 1576 (H04, Wed)	Amir, Fatima	151 (A01, Wed)
Abella, Laura	806 (B05, Wed)	Ai, Yuanfei	609 (A04, Mon)	Amit, Moran	1538 (H04, Mon)
Abermathy, Harry	1791 (I04, Wed), 1941 (I06, Mon), 2320 (L05, Tue), 2361 (L05, Thu), 2363 (L05, Thu)	Aidoud, Djamel	4 (A01, Sun)	Amstutz, Véronique	179 (A02, Tue)
Abiade, Asha	78 (A01, Mon)	Aidun, Ruby	2138 (L01, Wed)	An, Cheol	2524 (Z01, Tue), 2560 (Z01, Tue)
Abney, Carter	1116 (C02, Mon)	Aiken, Connor	2158 (L01, Wed)	An, Cheol Hyun	2561 (Z01, Tue)
Abraham, Daniel	464 (A03, Wed), 475 (A03, Wed), 568 (A03, Thu), 1949 (I06, Tue)	Ait Hammou Taleb, Said	1745 (I04, Mon)	An, Jihwan	862 (B06, Tue), 1807 (I04, Wed)
Abraham, Rosmi	2479 (M02, Mon)	Ajay Piriya, Vijaya kumar Saroja	318 (A03, Mon), 328 (A03, Mon)	An, Ki-Seok	865 (B06, Tue)
Abrahams, Isaac	824 (B05, Thu)	Ajayi, Babajide	1178 (D02, Mon)	An, Liang	1971 (I06, Tue)
Abroshan, Hadi	1602 (I02, Wed), 2344 (L05, Wed)	Akasaka, Takeshi	807 (B05, Wed)	Anand, Robbyn	2113 (L01, Mon)
Abu-Lebdeh, Yaser	476 (A03, Wed), 2289 (L04, Tue)	Akhtar, M. Shaheer	2097 (L01, Mon)	Anandan, Srinivasan	320 (A03, Mon)
Acebedo, Begoña	579 (A03, Thu)	Akinwande, Deji	896 (B06, Thu), 1535 (H04, Mon)	Anantram, M.	1488 (H03, Mon)
Acharya, Prashant	1681 (I03, Tue), 2013 (I07, Tue)	Akita, Takanori	1255 (E02, Wed)	Anasori, Babak	1136 (C02, Wed)
Acharya, Saurabh	2269 (L04, Mon), 2575 (Z01, Tue)	Akkaraju, Giridhar	681 (B02, Mon), 694 (B02, Tue)	Anastasia, Caroline	29 (A01, Mon)
Achsnich, Melanie	748 (B03, Tue)	Ako, Takumi	912 (B07, Tue)	Andersen, Hanne	2588 (Z01, Tue)
Ackermann, Mathieu	1821 (I05, Sun)	Akolkar, Rohan	1218 (E01, Wed)	Andersen, Nalin	2243 (L03, Wed), 2540 (Z01, Tue)
Ackerson, Joseph	300 (A03, Mon)	Akrasi, James	1276 (F01, Mon)	Anderson, Erik	1203 (E01, Tue)
Acosta, Laura	1523 (H03, Wed), 2397 (L06, Tue)	Akutsu, Kazuhiro	2120 (L01, Tue)	Anderson, Erik	645 (B01, Mon)
Adams, Jada	78 (A01, Mon)	Al Shakhshir, Saher	1814 (I04, Wed), 1815 (I04, Thu)	Anderson, Harry	985 (B08, Mon)
Adams, Janelle	682 (B02, Mon)	Al-Galiby, Qusiy	985 (B08, Mon)	Anderson, Travis	1407 (H01, Mon), 1409 (H01, Mon), 1410 (H01, Mon)
Addison, Dan	252 (A03, Sun), 426 (A03, Tue)	Al-Mamun, Mohammad	1476 (H02, Tue)	Anderson, Travis	1356 (F02, Wed)
Adelowo, Ebenezer	162 (A01, Wed), 433 (A03, Tue), 658 (B01, Tue)	Al-yasiri, Mohammed	75 (A01, Mon)	Ando, Fuma	2512 (Z01, Tue)
Adelstein, Nicole	319 (A03, Mon), 1330 (F02, Tue), 2542 (Z01, Tue)	Alam, Todd	136 (A01, Tue)	Ando, Nobuo	2514 (Z01, Tue)
Adepoju, Adewale	512 (A03, Wed)	Alamgir, Faisal	770 (B04, Mon), 856 (B06, Tue)	Andrade Jr., Marcos	1098 (C01, Wed)
Adhikari, Pashupati	2531 (Z01, Tue)	Albrecht, Kevin	1963 (I06, Tue)	Andrea, Vinicius	1593 (I01, Wed)
Adkins, Joshua	78 (A01, Mon), 79 (A01, Mon)	Alcaraz, Geoffrey	1198 (E01, Tue)	Andrescu, Silvana	2063 (K03, Wed), 2437 (M01, Wed)
Adler, Stuart	581 (A03, Thu), 1938 (I06, Mon), 1939 (I06, Mon), 2148 (L01, Wed)	Alcoutlabi, Mataz	414 (A03, Tue), 550 (A03, Wed), 556 (A03, Wed)	Andrei, Petru	280 (A03, Sun)
Adzic, Radoslav	1728 (I04, Sun), 2167 (L02, Mon), 2171 (L02, Mon), 2173 (L02, Mon), 2174 (L02, Mon), 2184 (L02, Tue), 2219 (L02, Thu), 2230 (L02, Thu)	Alexandrov, Vitaly	357 (A03, Mon), 1078 (C01, Tue)	Andreu, Irene	1638 (I03, Mon), 1673 (I03, Tue)
Afanasiev, Valeri	842 (B06, Tue)	Alexeev, Alexander	2472 (M01, Thu)	Andriamiadanana, Christian	2146 (I01, Wed)
Afsahi, Foroughazam	1744 (I04, Mon)	Alfonso, Dominic	1835 (I05, Sun)	Andrieu, François	1462 (H02, Mon)
Afzal, Rana Arslan	2535 (Z01, Tue)	Alhabeab, Mohamed	1136 (C02, Wed)	Ang, Simon	94 (A01, Mon), 530 (A03, Wed)
Agopian, Paula	1460 (H02, Mon), 1468 (H02, Mon), 1473 (H02, Tue)	Ali, Ghulam	494 (A03, Wed), 558 (A03, Wed)	Angalakuthi, Rambabu	409 (A03, Tue)
Agraït, Nicolás	985 (B08, Mon)	Ali, Zulfiqar	705 (B03, Tue)	Angelini, Emma	1048 (C01, Mon)
Agrawal, Amit	2582 (Z01, Tue)	Ali Khan, Abbas	1302 (F01, Tue)	Angst, Ueli	1051 (C01, Mon)
Agrawal, Richa	162 (A01, Wed), 433 (A03, Tue), 1028 (B09, Sun)	Alikarami, Mohammad	2557 (Z01, Tue)	Anibal, Jacob	2006 (I07, Mon)
Agrawal, Shailesh	2265 (L03, Thu)	Alkan Gürsel, Selmiye	2300 (L05, Mon), 2350 (L05, Wed)	Ansar, Asif	15 (A01, Sun)
Aguilan, Claudio	1102 (C01, Wed)	Allada, Diya	1674 (I03, Tue)	Anthony, John	228 (A02, Wed)
Agyeman, Augustine	2159 (L01, Wed)	Allard, Charlotte	677 (B02, Mon)	Anthopoulos, Thomas	892 (B06, Thu)
Ahamad, Salahuddin	737 (B03, Thu)	Allcorn, Eric	209 (A02, Tue), 235 (A02, Wed)	Antoniuk-Pablant, Antaeres	1615 (I02, Wed)
Ahluwalia, Rajesh	1591 (I01, Wed), 2319 (L05, Tue)	Allen, Jan	290 (A03, Mon)	Anwani, Sandip	614 (A04, Mon)
Ahmad, Qazi	1302 (F01, Tue)	Allendorf, Mark	2369 (L06, Mon)	Ao, Geyou	719 (B03, Wed)
Ahmad, Yasser	1733 (I04, Sun)	Allerman, Andrew	1406 (H01, Mon), 1413 (H01, Tue)	Aoyagi, Shinobu	802 (B05, Wed)
Ahmed, Kumkum	2452 (M01, Wed), 2460 (M01, Wed)	Allison, Nathanael	2041 (K01, Tue), 2044 (K01, Tue)	Aoyama, Tomoya	971 (B08, Sun)
Ahmed, Rasin	1916 (I05, Thu)	Allu, Srikanth	487 (A03, Wed)	Apblett, Christopher	38 (A01, Mon)
Ahmida, Mohamed	1001 (B08, Tue)	Almeida, Carlos	1384 (G01, Tue)	Aphale, Ashish	1121 (C02, Tue), 1599 (I02, Wed)
Ahmmad, Bashir	2625 (Z02, Wed)	Almomtan, Mohammed	2424 (M01, Wed)	Aphirakaramwong, Chalita	655 (B01, Tue)
Ahn, Chi-Yeong	2352 (L05, Wed)	Almuslem, Amani	1574 (H04, Wed)	Appa Rao, B. V.	320 (A03, Mon)
		Alonso, Julio	801 (B05, Wed)	Appenzeller, Joerg	880 (B06, Wed)
		Alper, John	467 (A03, Wed)	Appiah, Williams Agyei	91 (A01, Mon)
		Alshahrani, Aisha	2541 (Z01, Tue)	Aqua, Jean-Noël	1172 (D01, Wed)
		Alsubhi, Zamzam	771 (B04, Mon)	Aradilla, David	248 (A03, Sun)
		Althues, Holger	337 (A03, Mon)	Arao, Masazumi	2210 (L02, Wed)
		Altomare, Marco	1918 (I05, Thu), 2398 (L06, Tue)	Aras, Mustafa	1295 (F01, Tue)
		Alvarado, Judith	548 (A03, Wed)	Arasimowicz, Monika	1841 (I05, Sun)
		Alvarado, Judith	594 (A03, Thu)	Arava, Leela	148 (A01, Wed), 515 (A03, Wed)
		Alvarez, Alejandra	2493 (M02, Tue)	Aravamudhan, Shyam	2403 (M01, Tue)
				Aravamuthan, Sundar	1691 (I03, Wed)
				Arbault, Stéphane	2130 (L01, Tue)
				Arbouet, Arnaud	1165 (D01, Wed)
				Arcon, Iztok	256 (A03, Sun)
				Ardebili, Haleh	327 (A03, Mon)
				Ardebili, Haleh	437 (A03, Tue)
				Ardo, Shane	1890 (I05, Wed), 2284 (L04, Tue)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Arenal, R.	750 (B03, Thu), 1149 (D01, Mon)	Ausderau, Logan	352 (A03, Mon), 439 (A03, Tue)	Ban, Hee-Jung	491 (A03, Wed), 545 (A03, Wed), 1651 (I03, Mon)
Arges, Christopher	1762 (I04, Tue)	Avdoshenko, Stanislav	814 (B05, Thu)	Bance-Soualhi, Rachida	1748 (I04, Mon)
Arias, Dylan	738 (B03, Thu), 751 (B03, Thu)	Aydogan-Gokturk, Pinar	2107 (L01, Mon), 2152 (L01, Wed)	Banerjee, Anjan	309 (A03, Mon)
Arias, Pedro	839 (B06, Tue)	Ayemoba, Onagie	2150 (L01, Wed)	Banerjee, Parama	620 (B01, Sun)
Ariga, Katsuhiko	1011 (B08, Tue)	Ayers, Katherine	1595 (I02, Wed), 1647 (I03, Mon), 1648 (I03, Mon), 1672 (I03, Tue), 2013 (I07, Tue), 2015 (I07, Tue)	Banerjee, Sanjoy	53 (A01, Mon), 115 (A01, Mon), 140 (A01, Tue), 2572 (Z01, Tue)
Arinicheva, Yulia	480 (A03, Wed)	Aykol, Muratahan	442 (A03, Wed)	Banerjee, Soumik	171 (A01, Thu), 1333 (F02, Tue), 2600 (Z01, Tue)
Armand, Michel	2289 (L04, Tue)	Azimi, Gisele	344 (A03, Mon), 617 (A04, Mon), 1311 (F01, Wed)	Bang, Jisuk	636 (B01, Sun)
Armstrong, Andrew	1413 (H01, Tue)	Aziz, Michael	21 (A01, Sun), 22 (A01, Sun)	Bang, Yannick	2334 (L05, Wed)
Armstrong, Beth	9 (A01, Sun), 2631 (Z02, Wed)			Banharm, Dustin	2170 (L02, Mon)
Armuzza, Valentina	768 (B04, Mon)			Banhart, John	382 (A03, Tue), 477 (A03, Wed)
Árnadóttir, Líney	1099 (C01, Wed), 1100 (C01, Wed)			Bansal, Narottam	1128 (C02, Tue)
Arnarson, Logi	2316 (L05, Tue)			Bao, Han	2543 (Z01, Tue)
Arnault, Jean-Charles	689 (B02, Tue)			Bao, Jie	190 (A02, Tue)
Arnaut, Luis	1016 (B08, Tue)			Bao, Rongrong	1447 (H01, Wed)
Arnold, Christopher	856 (B06, Tue)			Barai, Pallab	59 (A01, Mon), 176 (A01, Thu), 265 (A03, Sun)
Arnold, Michael	707 (B03, Tue), 829 (B06, Mon)			Baran, Phil	2069 (K03, Wed)
Arnold, Michael	714 (B03, Wed)			Baranton, Stève	2299 (L05, Mon)
Arral, Mariah	2139 (L01, Wed)			Barboun, Patrick	2003 (I07, Mon)
Arredondo, Imelda	2130 (L01, Tue)			Bardé, Fanny	578 (A03, Thu), 2276 (L04, Mon)
Arreola, Diana	1079 (C01, Tue)			Barendt, Timothy	827 (B05, Thu)
Arriaga, Luis	2493 (M02, Tue)			Bareno, Javier	567 (A03, Thu)
Arroval, Tonis	1475 (H02, Tue)			Barile, Christopher	1198 (E01, Tue), 1260 (E02, Wed)
Arruda, Thomas	76 (A01, Mon), 214 (A02, Tue), 215 (A02, Tue)			Barillaro, Giuseppe	1385 (G01, Tue), 1386 (G01, Tue)
Arthurs, Colin	2033 (K01, Mon), 2583 (Z01, Tue)			Barkam, Swetha	2507 (M02, Tue)
Artyushkova, Kateryna	2243 (L03, Wed), 2303 (L05, Mon), 2311 (L05, Tue), 2347 (L05, Wed), 2540 (Z01, Tue)			Barnes, Pete	471 (A03, Wed)
Aruda, Kenneth	108 (A01, Mon)			Barnett, Alejandro	1737 (I04, Sun), 1773 (I04, Wed), 1801 (I04, Wed), 1806 (I04, Wed)
Arugula, Mary	2245 (L03, Wed), 2251 (L03, Wed)			Baron, Robert	33 (A01, Mon)
Arul, Anupriya	500 (A03, Wed)			Baron, Zack	2510 (M02, Tue)
Arunchalam, Harikesh	1351 (F02, Wed)			Baroody, Heather	1359 (F02, Thu)
Aryaksama, Thibault	733 (B03, Wed)			Barpanda, Prabbeer	383 (A03, Tue), 409 (A03, Tue), 2307 (L05, Mon)
Asadi, Mohammad	23 (A01, Sun)			Barraud, Sylvain	1370 (G01, Mon)
Asano, Tetsuya	484 (A03, Wed)			Barraza-Lopez, Salvador	2399 (L06, Tue)
Asaoka, Takahiko	1770 (I04, Wed)			Barry, Dana M.	668 (B02, Sun), 2027 (K01, Mon)
Asbeck, Peter	1405 (H01, Mon)			Barry, Fiona	1208 (E01, Wed)
Ashby, David	498 (A03, Wed)			Barton, John	228 (A02, Wed)
Asheim, Karina	2588 (Z01, Tue)			Barton, Joseph	2281 (L04, Mon)
Ashraf Gandomi, Yasser	13 (A01, Sun), 2257 (L03, Thu)			Basher, Samiul	2409 (M01, Tue)
Ashrafi, Ali	1069 (C01, Tue)			Bashyam, Rajesh	1744 (I04, Mon)
Ashuri, Maziar	424 (A03, Tue)			Başkan, Mertcan	1305 (F01, Tue)
Ashuri, Maziar	43 (A01, Mon)			Baskar, Senthilkumar	383 (A03, Tue), 409 (A03, Tue), 2307 (L05, Mon)
Ashworth, Dominic	1382 (G01, Tue)			Basso, Rodrigo	87 (A01, Mon)
Assary, Rajeev	230 (A02, Wed)			Basu, Soumendra	1936 (I06, Mon)
Asselberghs, Inge	842 (B06, Tue)			Basu, Suddhasatwa	2646 (Z03, Wed)
Asset, Tristan	1587 (I01, Wed), 1733 (I04, Sun), 1779 (I04, Wed), 1783 (I04, Wed)			Batara, Nicolas	2142 (L01, Wed), 2633 (Z02, Wed)
Ataca, Can	868 (B06, Wed)			Bates, Michael	1702 (I03, Wed)
Atanassov, Plamen	1779 (I04, Wed), 2209 (L02, Wed), 2241 (L03, Wed), 2242 (L03, Wed), 2243 (L03, Wed), 2303 (L05, Mon), 2311 (L05, Tue), 2347 (L05, Wed), 2540 (Z01, Tue)			Batisse, Nicolas	1733 (I04, Sun)
Atcity, Stan	2627 (Z02, Wed)			Batista, Enrique	229 (A02, Wed)
Atek, Imene	18 (A01, Sun)			Batista Neto, Joao	1098 (C01, Wed)
Atkinson, Robert	1727 (I04, Sun)			Battaglia, Corsin	404 (A03, Tue), 2516 (Z01, Tue)
Atla, Veerendra	951 (B07, Thu)			Battiato, Ilenia	1351 (F02, Wed)
Atobe, Mahito	2046 (K01, Tue), 2047 (K01, Tue)			Battirolo, Liliane	87 (A01, Mon)
Attanayake, N.	228 (A02, Wed)			Batude, Perrine	1462 (H02, Mon)
Attard, Gary	2182 (L02, Tue)			Baturina, Olga	1871 (I05, Tue), 2154 (L01, Wed)
Attenkofer, Klaus	316 (A03, Mon)			Baudin, Emmanuel	879 (B06, Wed)
Atwa, Marwa	2384 (L06, Tue), 2387 (L06, Tue)			Baughman, Ray	651 (B01, Mon)
Atwater, Harry	2059 (K03, Tue), 2142 (L01, Wed), 2633 (Z02, Wed)			Bawol, Pawel	576 (A03, Thu)
Aubry, Raphaël	1412 (H01, Mon)			Bayndir, Zeynel	1183 (D02, Mon)
Auchter, Eric	859 (B06, Tue)			Bayrakçeken Yurtcan, Ayse	2300 (L05, Mon)
Audoit, Guillaume	1370 (G01, Mon)			Bazan, Claudia	692 (B02, Tue)
Augendre, Emmanuel	1370 (G01, Mon)			Beard, Matthew	949 (B07, Thu)
Aurbach, Doron	310 (A03, Mon), 370 (A03, Mon)			Beasor, Scott	1368 (G01, Mon)
Aurbach, Doron	261 (A03, Sun), 309 (A03, Mon), 462 (A03, Wed)			Beaugar, Christian	1668 (I03, Tue)
Aureau, Damien	2151 (L01, Wed)			Beavers, John	1053 (C01, Mon)
				Beck, Victor	192 (A02, Tue)
				Becker, James	2042 (K01, Tue)
				Becker, Melissa	522 (A03, Wed)

B

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Beckhoff, Burkhard	900 (B06, Thu)	Bi, Wencho	2612 (Z01, Tue)	Borchers, Janis	2113 (L01, Mon)
Beckman, Scott	171 (A01, Thu), 1333 (F02, Tue), 1334 (F02, Tue), 2600 (Z01, Tue)	Bi, Yujing	264 (A03, Sun)	Bordet, Pierre	1783 (I04, Wed)
Beckmann, Karsten	1382 (G01, Tue)	Bianchini, Matteo	373 (A03, Tue), 391 (A03, Tue)	Borduas, Godefroy	692 (B02, Tue)
Beckmann, Thomas	2261 (L03, Thu), 2527 (Z01, Tue)	Biçer, Emre	2300 (L05, Mon), 2350 (L05, Wed)	Borlaf, Mario	1676 (I03, Tue)
Becknell, Nigel	2298 (L05, Mon)	Biddinger, Elizabeth	125 (A01, Tue)	Bornhuetter, Tobias	1008 (B08, Tue)
Bedjaoui, Messaoud	1214 (E01, Wed)	Biddy, Mary	2011 (I07, Tue)	Borodin, Oleg	387 (A03, Tue), 2286 (L04, Tue)
Beer, Paul	2261 (L03, Thu)	Bieberle-Hütter, Anja	1908 (I05, Thu)	Borovkov, Victor	996 (B08, Mon)
Behrens, Peter	211 (A02, Tue)	Bieker, Georg	257 (A03, Sun)	Borsboom, Tory	2543 (Z01, Tue)
Beidaghi, Majid	157 (A01, Wed), 347 (A03, Mon), 832 (B06, Mon)	Bieker, Peter	257 (A03, Sun)	Borst, Christopher	1382 (G01, Tue)
Beiler, Anna	972 (B08, Sun)	Biener, Juergen	192 (A02, Tue), 622 (B01, Sun), 1610 (I02, Wed), 2366 (L06, Mon)	Borup, Rod	1591 (I01, Wed), 1796 (I04, Wed)
Bekyarova, Elena	710 (B03, Tue)	Biener, Monika	622 (B01, Sun), 1610 (I02, Wed)	Bosque, Irene	2080 (K03, Thu)
Belgibayeva, Ayaulym	2563 (Z01, Tue)	Bienkowski, Krzysztof	1841 (I05, Sun)	Bosseboeuf, Alain	2486 (M02, Mon)
Bell, Alexis	1362 (F02, Thu)	Bilal, Muhammad	1302 (F01, Tue)	Botas, Cristina	579 (A03, Thu)
Belotti, Alessio	2642 (Z03, Wed)	Billing, Caren	287 (A03, Mon)	Bothra, Pallavi	2344 (L05, Wed)
Ben Sahil, Ahmed	2057 (K03, Tue)	Billon, Florence	2466 (M01, Thu)	Bothra, Shilpa	2447 (M01, Wed)
Benavidez, Angelica	2007 (I07, Tue), 2012 (I07, Tue)	Billy, Emmanuel	612 (A04, Mon)	Botrel, Roman	2616 (Z02, Wed)
Benayad, Anass	10 (A01, Sun)	Binkowski, Felix	1164 (D01, Wed)	Bott-Neto, José	2166 (L02, Mon)
Bencherif, Amira	692 (B02, Tue)	Birss, Viola	2172 (L02, Mon), 2384 (L06, Tue), 2386 (L06, Tue), 2387 (L06, Tue)	Bottari, Giovanni	982 (B08, Mon)
Bender, Guido	1687 (I03, Wed)	Bishop, Sean	1933 (I06, Mon), 1958 (I06, Tue)	Botte, Gerardine	107 (A01, Mon)
Bender, Guido	1743 (I04, Mon)	Biswal, Sibani	353 (A03, Mon)	Botton, Gianluigi	1625 (I02, Thu)
Bender, Timothy	991 (B08, Mon)	Biswas, Sanjay	318 (A03, Mon), 328 (A03, Mon)	Bouchet, Renaud	10 (A01, Sun), 585 (A03, Thu)
Bendersky, Leonid	1230 (E02, Mon)	Bitenc, Jan	256 (A03, Sun)	Bouffier, Laurent	2130 (L01, Tue)
Benedetti, Assis	1082 (C01, Tue), 1309 (F01, Tue), 2565 (Z01, Tue), 2579 (Z01, Tue)	Bizzotto, Dan	1797 (I04, Wed), 2133 (L01, Tue)	Bougher, Thomas	645 (B01, Mon)
Benedict, Zoe	1131 (C02, Tue)	Blackburn, Jeffrey	646 (B01, Mon), 660 (B01, Tue), 724 (B03, Wed), 738 (B03, Thu), 751 (B03, Thu), 853 (B06, Tue)	Bouilly, Delphine	684 (B02, Mon), 692 (B02, Tue), 741 (B03, Thu)
Bennett, James	1113 (C02, Mon), 1141 (C02, Wed), 1142 (C02, Wed)	Blackwood, Daniel J.	1973 (I06, Tue)	Boulaoued, Athmane	602 (A03, Thu)
Bennett, Stephen	1382 (G01, Tue)	Blanchard, Didier	2377 (L06, Mon)	Boulineau, Adrien	612 (A04, Mon)
Benson, Eric	853 (B06, Tue)	Blanco, Maria	1797 (I04, Wed), 1817 (I04, Thu)	Boult, Stephen	2476 (M02, Mon)
Berardi, Marc	1183 (D02, Mon)	Blank, David	990 (B08, Mon)	Bourlier, Yoan	1412 (H01, Mon)
Berberzier, Isabelle	1172 (D01, Wed)	Blesznowski, Marcin	1307 (F01, Tue)	Bouteau, Gaspard	2146 (L01, Wed)
Berg, Erik	322 (A03, Mon)	Blicharska, Magdalena	2325 (L05, Tue)	Boutemy, Muriel	1412 (H01, Mon), 2151 (L01, Wed)
Bergemann, Kevin	709 (B03, Tue)	Bliley, Jacqueline	1520 (H03, Wed)	Boyd, Michael	2202 (L02, Wed)
Bergler, Felix	700 (B03, Thu)	Bloed, Charles	1982 (I06, Wed)	Boydston, Andrew	2066 (K03, Wed), 2093 (K03, Thu)
Berhaut, Christopher	248 (A03, Sun)	Bloesser, André	1905 (I05, Thu)	Bozheyev, Farabi	1854 (I05, Mon)
Bernard, Pierre	467 (A03, Wed)	Blom, Anders	2070 (K03, Wed)	Bozza, Francesco	1676 (I03, Tue)
Bernier, Nicolas	1370 (G01, Mon)	Bloom, Ira	466 (A03, Wed), 567 (A03, Thu)	Brady, Gerald	714 (B03, Wed)
Berry, Adam	351 (A03, Mon)	Blumberger, Jochen	2109 (L01, Mon)	Brady, Michael	1127 (C02, Tue)
Berry, Neil	2182 (L02, Tue)	Bo, Shou-Hang	385 (A03, Tue)	Brady, Nicholas	1341 (F02, Wed)
Berson, Arganthaël	707 (B03, Tue)	Boardman, Richard	1646 (I03, Mon)	Bragg, Dustin	158 (A01, Wed)
Bertasi, Federico	1758 (I04, Tue), 2289 (L04, Tue), 2334 (L05, Wed)	Boateng, Elvis	2082 (K03, Thu)	Branchi, Mario	212 (A02, Tue)
Bertheussen, Erlend	1612 (I02, Wed)	Bobeth, Manfred	1254 (E02, Wed)	Brandenburg, Ariane	814 (B05, Thu)
Berthon-Fabry, Sandrine	1733 (I04, Sun)	Bocharova, Vera	49 (A01, Wed)	Brandon, Nigel	219 (A02, Wed), 2143 (L01, Wed), 2306 (L05, Mon)
Berthou, Simon	879 (B06, Wed)	Boettcher, Shannon	1904 (I05, Thu)	Brankovic, Stanko	1226 (E02, Mon), 2162 (L02, Mon), 2571 (Z01, Tue)
Bertocci, Ugo	1230 (E02, Mon), 1981 (I06, Wed), 1985 (I06, Wed)	Bogan, Jeffrey	2453 (M01, Wed)	Branzoi, Florina	1086 (C01, Tue)
Bertz, Morten	1241 (E02, Tue)	Bogdanoff, Peter	1854 (I05, Mon)	Branzoi, Viorel	1086 (C01, Tue)
Besnard, Nicolas	2271 (L04, Mon)	Boghossian, Ardemis	673 (B02, Mon), 680 (B02, Mon), 747 (B03, Thu)	Braun, Trevor	1256 (E02, Wed)
Bessarabov, Dmitri	1601 (I02, Wed), 1639 (I03, Mon)	Bohn, Jessica	1140 (C02, Wed)	Braz, Álvaro	1090 (C01, Wed)
Bessouet, Clément	2486 (M02, Mon)	Bohn, Paul	2126 (L01, Tue), 2500 (M02, Tue)	Brems, Steven	842 (B06, Tue), 846 (B06, Tue)
Bethune, Keith	1588 (I01, Wed)	Boillat, Pierre	1793 (I04, Wed)	Brett, Daniel	2589 (Z01, Tue)
Bevilaqua, Denise	1309 (F01, Tue)	Boitrel, Bernard	932 (B07, Wed)	Breugelmanns, Tom	1207 (E01, Wed), 1274 (F01, Mon), 1298 (F01, Tue)
Bevlin, Kristen	1419 (H01, Tue), 1421 (F01, Tue)	Boldrin, Paul	2143 (L01, Wed), 2306 (L05, Mon)	Březina, Vaclav	1011 (B08, Tue)
Bewley, Randy	121 (A01, Tue)	Bolli, Christoph	322 (A03, Mon)	Briega-Martos, Valentın	2330 (L05, Wed)
Beyenal, Haluk	2056 (K03, Tue), 2057 (K03, Tue), 2096 (L01, Mon), 2256 (L03, Thu), 2263 (L03, Thu), 2496 (M02, Tue)	Boltersdorf, Jonathan	2618 (Z02, Wed)	Brintlinger, Todd	1871 (I05, Tue)
Beyene, Abraham	676 (B02, Mon)	Bommier, Clement	521 (A03, Wed), 608 (A04, Mon)	Britt, Tommy	1120 (C02, Tue)
Beyer, Hans	139 (A01, Tue), 488 (A03, Wed)	Bommier, Clement	258 (A03, Sun)	Broekmann, Peter	1231 (E02, Tue), 1259 (E02, Wed)
Bhagat, Rohit	2413 (M01, Tue)	Bonabi Naghadeh, Sara	1838 (I05, Sun)	Bronstein, Noah	853 (B06, Tue)
Bhandari, Arihant	65 (A01, Mon)	Bonakdarpour, Arman	1300 (F01, Tue), 1365 (F02, Thu), 1666 (I03, Tue), 1767 (I04, Tue)	Brooke, Richard	2275 (L04, Mon)
Bhansali, Shekhar	2477 (M02, Mon)	Bonelli, Paolo	2258 (L03, Thu)	Brosmer, Jonathan	811 (B05, Wed)
Bhattacharya, Jishnu	65 (A01, Mon)	Boni, Alessandro	854 (B06, Tue)	Brothers, Michael	2426 (M01, Wed)
Bhattacharya, Papri	2005 (I07, Mon)	Bonnaud, Celine	1779 (I04, Wed)	Broussillou, Cedric	1310 (F01, Wed)
Bhattarai, Mohan	71 (A01, Mon), 2653 (Z03, Wed)	Bonnefont, Antoine	2318 (L05, Tue)	Brown, Bruce	1065 (C01, Tue)
Bhide, Ashlesha	1190 (D02, Mon), 2448 (M01, Wed)	Bonnett, Jeff	210 (A02, Tue), 232 (A02, Wed), 214 (A02, Wed)	Brown, Zachary	455 (A03, Wed)
Bhowmik, Arghya	1607 (I02, Wed)	Bonville, Leonard	1643 (I03, Mon), 1728 (I04, Sun), 2281 (L04, Mon), 2282 (L04, Mon), 2323 (L05, Tue), 2355 (L05, Thu), 2449 (M01, Tue)	Browning, James	469 (A03, Wed)
Bhushan, Pulak	2477 (M02, Mon)	Book, Jeffrey	2259 (L03, Thu)	Browning, Katie	469 (A03, Wed)
				Bruce, David	1700 (I03, Wed)
				Bruce, Peter	421 (A03, Tue)
				Brunet, Laurent	1462 (H02, Mon)
				Brunini, Victor	134 (A01, Tue), 173 (A01, Thu)
				Bruno, Odemir	1098 (C01, Wed)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Brunschwig, Bruce	2135 (L01, Wed)	Canfield, Nathan	42 (A01, Mon), 232 (A02, Wed), 234 (A02, Wed)	Chagarov, Evgueni	1405 (H01, Mon)
Brushett, Fikile	226 (A02, Wed), 228 (A02, Wed), 230 (A02, Wed), 2149 (L01, Wed)	Cannas, M.	1149 (D01, Mon)	Chaisakul, Papichaya	1173 (D01, Wed)
Brydson, Rik	1042 (C01, Mon)	Canova, Marcello	46 (A01, Mon)	Chaitree, Wasu	1275 (F01, Mon)
Buchberger, Irmgard	376 (A03, Tue)	Cantane, Daniel	87 (A01, Mon)	Chaix-Pluchery, Odette	1191 (D02, Mon)
Buchsbaum, Steven	703 (B03, Tue)	Cantillo, Nelly	198 (A02, Tue), 1777 (I04, Wed)	Chakrabarty, Ayan	1521 (H03, Wed)
Buckley, D. Noel	197 (A02, Tue), 1980 (I06, Wed), 2395 (L06, Tue)	Cao, Guozhong	308 (A03, Mon), 345 (A03, Mon), 907 (B07, Tue), 2612 (Z01, Tue), 2613 (Z01, Tue)	Chakraborty, Suman	1030 (B09, Sun)
Budanović, Maja	1629 (I02, Thu)	Cao, Jiamu	1726 (I04, Sun)	Chakrapani, Vidhya	27 (A01, Mon), 1443 (H01, Wed)
Budhathoki-Uprety, Januka	674 (B02, Mon), 685 (B02, Mon), 746 (B03, Thu)	Cao, Jiyu	570 (A03, Thu)	Chalamala, Babu	1356 (F02, Wed)
Buenaventura, Ayla	2033 (K01, Mon), 2583 (Z01, Tue)	Cao, Lei	356 (A03, Mon)	Chamberlin, Rebecca	859 (B06, Tue)
Bueno, Liana	2556 (Z01, Tue)	Cao, Rui	967 (B08, Sun)	Champagne, Pascal	1271 (F01, Mon)
Buesen, Darren	2250 (L03, Wed)	Cao, Yang	29 (A01, Mon)	Chan, Candace	478 (A03, Wed), 1874 (I05, Wed)
Bugga, Ratnakumar	283 (A03, Sun)	Cao, Yidan	393 (A03, Tue)	Chan, Chi-Lin	2462 (M01, Thu), 2508 (M02, Tue)
Bui, Justin	2520 (Z01, Tue)	Cao, Zhendong	2503 (M02, Tue)	Chan, Chian-Hsiu	1459 (H02, Mon)
Bui, Ngoc	703 (B03, Tue)	Cao, Ziyang	511 (A03, Wed)	Chan, Jason	707 (B03, Tue)
Bullard, George	727 (B03, Wed)	Çapraz, Ömer	1956 (I06, Tue)	Chan, Karen	1605 (I02, Wed), 1632 (I02, Thu)
Bullock, Morris	2005 (I07, Mon)	Capuano, Christopher	1595 (I02, Wed), 1672 (I03, Tue), 1808 (I04, Wed)	Chan, Po-Fan	1244 (E02, Tue)
Bultel, Yann	166 (A01, Thu)	Capuano, Rosamaria	993 (B08, Mon)	Chandesris, Marion	166 (A01, Thu), 467 (A03, Wed)
Bunha, Ajaykumar	144 (A01, Wed)	Carcadea, Elena	639 (B01, Sun)	Chandra, Shanelle	2438 (M01, Wed)
Buntin, Parker	856 (B06, Tue)	Cardin, Julien	1156 (D01, Tue)	Chandrabhan Shende, Rashmi	318 (A03, Mon), 328 (A03, Mon)
Burger, Sven	1164 (D01, Wed)	Carey, Patrick	1419 (H01, Tue)	Chandrasekaran, Swetha	192 (A02, Tue)
Burgess, Ian	1222 (E02, Mon)	Cargnello, Matteo	2010 (I07, Tue)	Chandrasiri, Dilni	555 (A03, Wed)
Burgess, James	2051 (K03, Tue)	Carim, Azhar	2059 (K03, Tue), 2142 (L01, Wed), 2633 (Z02, Wed)	Chang, Cheng-Yi	1435 (H01, Tue)
Burheim, Odne	170 (A01, Thu), 181 (A02, Tue)	Carini, Marco	768 (B04, Mon)	Chang, Cheng-Yi	1434 (H01, Tue)
Burrow, James	1681 (I03, Tue)	Carino, Emily	262 (A03, Sun), 263 (A03, Sun)	Chang, Ching	1446 (H01, Wed)
Burton, Sarah	548 (A03, Wed)	Carlà, Francesco	2118 (L01, Tue)	Chang, Chun	1684 (I03, Wed)
Busby, Yan	1779 (I04, Wed)	Carlson, Annika	1750 (I04, Mon)	Chang, Fu-Kuo	130 (A01, Tue)
Buttard, Denis	1172 (D01, Wed)	Carneiro, Lucas	1863 (I05, Tue)	Chang, Hao-Chun	1828 (I05, Sun)
Buzzo, Benjamin	2453 (M01, Wed)	Carney, Casey	1106 (C02, Mon)	Chang, Hee Jung	210 (A02, Tue), 232 (A02, Wed), 234 (A02, Wed)
Bylaska, Eric	2109 (L01, Mon)	Carotti, Francesco	2470 (M01, Thu)	Chang, Hung-Tzu	1863 (I05, Tue)
Byles, Bryan	114 (A01, Mon), 2581 (Z01, Tue)	Carotti, Francesco	1124 (C02, Tue)	Chang, Jia-Yaw	691 (B02, Tue)
Byun, Seungwoo	91 (A01, Mon), 92 (A01, Mon), 598 (A03, Thu)	Carriazo, Daniel	579 (A03, Thu)	Chang, Jiang	507 (A03, Wed), 508 (A03, Wed)
		Carroll, Kyler	566 (A03, Wed)	Chang, Jin Hyun	401 (A03, Tue)
		Carter, Aliya	2345 (L05, Wed)	Chang, Jun-Kai	1103 (C01, Wed), 1129 (C02, Tue), 1130 (C02, Tue)
		Carter, Michael	2417 (M01, Tue)	Chang, Li	1446 (H01, Wed)
		Carter, Rachel	1235 (E02, Tue)	Chang, Roger	683 (B02, Mon)
		Carter, Rich	258 (A03, Sun), 521 (A03, Wed)	Chang, Shouu-Jinn	2509 (M02, Tue)
		Carter, Rick	1368 (G01, Mon)	Chang, Shu-Yu	1472 (H02, Tue)
		Carter, W.	1960 (I06, Tue)	Chang, Syuan-kai	1472 (H02, Tue)
		Cascallana-Matias, Irene	1706 (I03, Thu)	Chang, Ting-Chang	1390 (G01, Tue)
		Cassan, Eric	1173 (D01, Wed)	Chang, Ting-Chang	1029 (B09, Sun)
		Casselman, Matthew	228 (A02, Wed)	Chang, Tso-Fu Mark	1204 (E01, Tue)
		Cassenti, Brice	1756 (I04, Tue)	Chang, Tzu-Hsuan	1563 (H04, Wed)
		Castán, Helena	1465 (H02, Mon), 1475 (H02, Tue)	Chang, Wei-Yuan	1396 (G01, Tue)
		Castro, Edison	806 (B05, Wed), 916 (B07, Tue)	Chang, Yao-Feng	1029 (B09, Sun)
		Cataldo, Macarena	1300 (F01, Tue)	Chang, Yee-Shin	1163 (D01, Tue)
		Caudill, Landon	1289 (F01, Tue)	Chang, Yi	977 (B08, Sun)
		Cavaliere, Sara	2340 (L05, Wed)	Chao, Chang-Po	1527 (H03, Wed)
		Cavinato, Gianni	1758 (I04, Tue)	Chao, Dongliang	371 (A03, Tue)
		Caymax, Matty	842 (B06, Tue)	Chao, Robin	1370 (G01, Mon)
		Cedano, Mario	2068 (K03, Wed), 2605 (Z01, Tue)	Chao, Yunfeng	834 (B06, Mon)
		Cedeño López, Alena	1259 (E02, Wed)	Chapman, James	2438 (M01, Wed)
		Ceder, Gerbrand	373 (A03, Tue), 385 (A03, Tue), 391 (A03, Tue)	Charbonneau, Valérie	1700 (I03, Wed)
		Celano, U.	842 (B06, Tue)	Charoen-amomkitt, Patcharawat	2106 (L01, Mon)
		Cerdeira, Antonio	1481 (H02, Tue)	Chase, Gregory	252 (A03, Sun)
		Cerón, Maira	622 (B01, Sun), 1284 (F01, Tue)	Chason, Eric	1979 (I06, Wed)
		Cetinbas, Firat	2319 (L05, Tue)	Chassagneux, Yannick	722 (B03, Wed)
		Cha, Eunho	539 (A03, Wed)	Chatenet, Marian	1587 (I01, Wed), 1727 (I04, Sun), 1733 (I04, Sun), 1778 (I04, Wed), 2539 (Z01, Tue)
		Cha, Eunho	863 (B06, Tue)	Chatterjee, Swamendu	1660 (I03, Mon)
		Cha, Soon	2524 (Z01, Tue), 2560 (Z01, Tue)	Chattot, Raphaël	1587 (I01, Wed), 1779 (I04, Wed), 1783 (I04, Wed)
		Cha, Soonhyung	2561 (Z01, Tue)	Chau, Colleen	2467 (M01, Thu)
		Cha, Younghwan	301 (A03, Mon), 420 (A03, Tue), 588 (A03, Thu), 2584 (Z01, Tue), 2594 (Z01, Tue), 2596 (Z01, Tue)	Chaudhri, Nivedita	980 (B08, Sun), 1022 (B08, Tue)
		Chacko, Antony	144 (A01, Wed)	Chavan, Kanchan	1336 (F02, Tue)
		Chae, Byeong-Gyu	412 (A03, Tue), 1910 (I05, Thu), 1911 (I05, Thu)	Chavez, Jorge	742 (B03, Thu), 2426 (M01, Wed)
		Chae, Changju	84 (A01, Mon)	Chavez, Madelaine	2241 (L03, Wed)
		Chae, Ji Eon	1759 (I04, Tue)	Chawla, Sandeep	1053 (C01, Mon)
		Chae, Sang Youn	1853 (I05, Mon)	Che, Haiying	81 (A01, Mon)

C

Cabana, Jordi	360 (A03, Mon)
Cabrera, Diogo	2157 (L01, Wed)
Cabrera, Carlos	1286 (F01, Tue), 2357 (L05, Thu)
Cadien, Ken	54 (A01, Mon)
Cai, Le	1543 (H04, Mon)
Cai, Li	919 (B07, Tue)
Cai, Rong	1995 (I07, Mon)
Cai, Wen-Bin	1613 (I02, Wed), 2221 (L02, Thu)
Cai, Wen-Rong	2435 (M01, Wed)
Cai, Wenting	791 (B05, Wed), 804 (B05, Wed), 817 (B05, Thu)
Cai, Wenting	794 (B05, Wed)
Cai, Yun	1049 (C01, Mon)
Cai, Yun	1796 (I04, Wed), 2173 (L02, Mon)
Cai, Zhiyong	1563 (H04, Wed)
Calabrese Barton, Scott	1336 (F02, Tue), 2242 (L03, Wed)
Caldwell, Benjamin	156 (A01, Wed)
Calero, Sonia	1885 (I05, Wed)
Caliendo, Charles	2559 (I01, Tue)
Calvinho, Karin	1903 (I05, Thu)
Calvo, Vincent	1172 (D01, Wed)
Camacho-Forero, Luis	2205 (L02, Wed)
Camaioni, Donald	1634 (I02, Thu)
Camargo, Paulo	1080 (C01, Tue)
Cambé, Sofie	751 (B03, Thu)
Cambre, Sofie	699 (B03, Tue)
Camilo, Mariana	1830 (I05, Sun)
Campbell, Charles	1634 (I02, Thu)
Campbell, Patrick	622 (B01, Sun), 1284 (F01, Tue), 2385 (L06, Tue)
Campbell, Quinn	1339 (F02, Tue)
Campbell, Stephen	375 (A03, Tue)
Campidelli, Stephane	716 (B03, Wed), 932 (B07, Wed)
Campo, Jochen	751 (B03, Thu)
Canaperi, Don	1371 (G01, Mon)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Cheek, Graham	2087 (K03, Thu)	Chen, Ying-Chen	1029 (B09, Sun)	Cho, Kuk Young	534 (A03, Wed), 544 (A03, Wed)
Cheema, Hammad	909 (B07, Tue), 918 (B07, Tue)	Chen, Ying-Ru	183 (A02, Tue)	Cho, Kyeongjae	66 (A01, Mon)
Chen, Bingan	847 (B06, Tue)	Chen, Yizheng	2407 (M01, Tue)	Cho, Seong	2524 (Z01, Tue), 2560 (Z01, Tue), 2561 (Z01, Tue)
Chen, Chi	2312 (L05, Tue)	Chen, Yu-Ze	836 (B06, Mon), 1571 (H04, Wed), 1576 (H04, Wed)	Cho, Seonghun	1746 (I04, Mon)
Chen, Chia-Hsiang	814 (B05, Thu)	Chen, Yun	2361 (L05, Thu)	Cho, Sung Beom	1425 (H01, Tue), 2358 (L05, Thu)
Chen, Chia-Wei	836 (B06, Mon)	Chen, Z	886 (B06, Wed)	Cho, Sung Ho	536 (A03, Wed)
Chen, Chiatai (Owen)	703 (B03, Tue)	Chen, Zhen	371 (A03, Tue)	Cho, Sung Ki	1659 (I03, Mon)
Chen, Ching-Hsiang	2137 (L01, Wed)	Chen, Zhenglin	1093 (C01, Tue)	Cho, Woongrae	293 (A03, Mon)
Chen, Ching-Hsiang Chen	2461 (M01, Thu)	Chen, Zhi	917 (B07, Tue)	Cho, Yong Soo	68 (A01, Mon), 69 (A01, Mon), 70 (A01, Mon), 2628 (Z02, Wed)
Chen, Ching-Hung	2637 (Z03, Wed)	Chen, Zhihong	897 (B06, Thu)	Cho, Yongil	1961 (I06, Tue)
Chen, Chun-Yi	1204 (E01, Tue)	Chen, Zhiting	1423 (H01, Tue)	Cho, Yoonjun	781 (B04, Tue), 783 (B04, Tue)
Chen, Dawei	1019 (B08, Tue)	Chen, Zhongwei	1716 (I03, Thu)	Chockalingam Pillai, Rajalekshmi	2419 (M01, Tue)
Chen, Fu-Chun	2326 (L05, Tue), 2362 (L05, Thu)	Chen-Wiegart, Yu-chen	316 (A03, Mon), 1077 (C01, Tue)	Choe, Seunghoe	1250 (E02, Tue)
Chen, Gugang	624 (B01, Sun), 947 (B07, Thu)	Cheng, Chaoqun	1924 (I05, Thu)	Choi, Daiwon	26 (A01, Mon)
Chen, Guohua	305 (A03, Mon)	Cheng, Cheanyeh	1472 (H02, Tue)	Choi, Dongwhi	1502 (H03, Tue), 1504 (H03, Tue)
Chen, Guohua	441 (A03, Tue)	Cheng, Gang	571 (A03, Thu)	Choi, Eun Yeob	662 (B01, Tue), 663 (B01, Tue)
Chen, Guoping	334 (A03, Mon)	Cheng, I-Kai	2455 (M01, Wed), 2463 (M01, Thu)	Choi, Ho-Suk	777 (B04, Tue), 782 (B04, Tue), 1182 (D02, Mon)
Chen, Hangrong	2328 (L05, Tue)	Cheng, Junfang	638 (B01, Sun)	Choi, Hong Je	70 (A01, Mon)
Chen, Hao-Long	1163 (D01, Tue)	Cheng, Kangguo	1371 (G01, Mon)	Choi, Hyejeong	2607 (Z01, Tue)
Chen, Hsin-An	1399 (G01, Tue)	Cheng, Mark Ming-Cheng	1486 (H03, Mon)	Choi, Il Yong	412 (A03, Tue), 1910 (I05, Thu), 1911 (I05, Thu)
Chen, Hsuan-Chu	1571 (H04, Wed)	Cheng, Shijie	116 (A01, Mon), 233 (A02, Wed)	Choi, Insoo	1291 (F01, Tue)
Chen, Hsun-Yi	1238 (E02, Tue), 1347 (F02, Wed)	Cheng, Tian-Le	1107 (C02, Mon)	Choi, Jae Sang	2652 (Z03, Wed)
Chen, Hung-Yu	2464 (M01, Thu)	Cheng, Xiaojing	2183 (L02, Tue)	Choi, Jae-Woo	2379 (L06, Mon)
Chen, I-Hsuan	2445 (M01, Wed), 2446 (M01, Wed)	Cheng, Xuan	495 (A03, Wed), 1718 (I04, Sun)	Choi, Jaechool	92 (A01, Mon)
Chen, Jen-Sue	1451 (H01, Wed)	Cheng, Yang-Tse	1953 (I06, Tue)	Choi, Ji Il	770 (B04, Mon)
Chen, Jerry	1348 (F02, Wed), 1350 (F02, Wed)	Cheng, Yang-Tse	2648 (Z03, Wed)	Choi, Ji Ung	407 (A03, Tue)
Chen, Jiaming	145 (A01, Wed)	Cheng, Yi-Lung	1395 (G01, Tue), 1396 (G01, Tue)	Choi, Jieun	1759 (I04, Tue)
Chen, Jianfeng	2380 (L06, Mon)	Cheng, Yu Ching	1813 (I04, Wed)	Choi, Kwang Sik	554 (A03, Wed)
Chen, Jing	2613 (Z01, Tue)	Cherkaoui, Karim	1464 (H02, Mon)	Choi, Kyoung Soon	864 (B06, Tue)
Chen, Jingguang	2231 (L02, Thu)	Chernikov, Alexey	875 (B06, Wed)	Choi, Kyoung-Shin	1847 (I05, Mon), 1917 (I05, Thu)
Chen, Jingyi	2225 (L02, Thu)	Chernova, Natasha A.	531 (A03, Wed)	Choi, Seokhoon	864 (B06, Tue)
Chen, Jixin	1988 (I06, Wed)	Chernyak, Leonid	1423 (H01, Tue)	Choi, Seong Soo	1518 (H03, Wed)
Chen, Josephine	125 (A01, Tue)	Chi, Yen-Ting	1933 (I06, Mon)	Choi, Seung Yo	1915 (I05, Thu)
Chen, Jui-Yuan	1312 (F01, Wed), 1314 (F01, Wed)	Chia, Xinyi	833 (B06, Mon)	Choi, Seunghyuk	838 (B06, Tue)
Chen, Jui-Yuan	1433 (H01, Tue), 2326 (L05, Tue), 2362 (L05, Thu)	Chiang, Chia-Ying	1671 (I03, Tue)	Choi, Soo Bong	1518 (H03, Wed)
Chen, Jyun-Hong	1576 (H04, Wed)	Chiang, Pen-Chi	1283 (F01, Tue)	Choi, Sun Hee	1812 (I04, Wed)
Chen, Kuei-Hsien	1658 (I03, Mon)	Chiang, Shan-Ju	2649 (Z03, Wed)	Choi, Sung Mook	1679 (I03, Tue), 1692 (I03, Wed), 1704 (I03, Wed), 1716 (I03, Thu)
Chen, Li-Chyong	1658 (I03, Mon)	Chiang, Yet-Ming	225 (A02, Wed), 1958 (I06, Tue)	Choi, Sung Ryul	2535 (Z01, Tue)
Chen, Lih-Juann	2327 (L05, Tue)	Chiang, Yet-Ming	1960 (I06, Tue)	Choi, Tae Youl	539 (A03, Wed)
Chen, Lih-Juann	2468 (M01, Thu)	Chiappe, Daniele	842 (B06, Tue)	Choi, Taekjib	102 (A01, Mon), 1391 (G01, Tue), 1392 (G01, Tue)
Chen, Liu	1809 (I04, Wed)	Chiashi, Shohei	702 (B03, Tue)	Choi, Wonbong	539 (A03, Wed), 776 (B04, Tue), 863 (B06, Tue)
Chen, Long-Qing	346 (A03, Mon)	Chiba, Kazuhiro	2043 (K01, Tue), 2049 (K01, Tue), 2062 (K03, Wed), 2085 (K03, Thu)	Choi, Wonyong	412 (A03, Tue), 1910 (I05, Thu), 1911 (I05, Thu)
Chen, Mengjie	2191 (L02, Tue)	Chidambaram, Dev	1126 (C02, Tue)	Choi, Woo Sung	1704 (I03, Wed)
Chen, Min-Chen	1390 (G01, Tue)	Chiesa, Matteo	1876 (I05, Wed)	Choi, Woo-Sung	1679 (I03, Tue), 1692 (I03, Wed)
Chen, Mingguang	710 (B03, Tue)	Chiggiano, Paolo	1261 (E02, Wed)	Choi, Woon-Seop	858 (B06, Tue)
Chen, Mingwei	2364 (L06, Mon)	Chiku, Masanobu	2223 (L02, Thu)	Choi, Young-Woo	1799 (I04, Wed), 1800 (I04, Wed)
Chen, Ning	788 (B05, Tue), 789 (B05, Tue), 791 (B05, Wed), 792 (B05, Wed), 817 (B05, Thu)	Child, Amy	1368 (G01, Mon)	Choi, Youngmin	84 (A01, Mon)
Chen, Pai-Yen	1486 (H03, Mon)	Chin, Bryan	2420 (M01, Tue), 2445 (M01, Wed), 2446 (M01, Wed)	Chong, Hyuncher	1382 (G01, Tue)
Chen, Pei-Chi	1487 (H03, Mon)	Chinello, Enrico	1821 (I05, Sun)	Chorkendorff, Ib	2226 (L02, Thu)
Chen, Peng	2128 (L01, Tue)	Chio, Linda	683 (B02, Mon)	Chorkendorff, Ib	1612 (I02, Wed), 1912 (I05, Thu), 1994 (I07, Mon), 2287 (L04, Tue), 2316 (L05, Tue)
Chen, Ping	1999 (I07, Mon)	Chiochan, Poramane	535 (A03, Wed)	Chou, Hsin-Hua	1972 (I06, Tue)
Chen, Qingping	144 (A01, Wed)	Chitumall, Ramesh	757 (B04, Mon)	Chou, Tsu-Chin	1658 (I03, Mon)
Chen, Rihui	1093 (C01, Wed)	Chitumalla, Ramesh Kumar	754 (B04, Mon)	Choudhary, Yogesh	1428 (H01, Tue)
Chen, Rongrong	2222 (L02, Thu)	Chiu, Che	1503 (H03, Tue)	Choudhury, Amitava	388 (A03, Tue)
Chen, Shuru	42 (A01, Mon), 394 (A03, Tue), 448 (A03, Wed), 548 (A03, Wed)	Chiu, Jian-Ming	1671 (I03, Tue)	Choudhury, Tanushree	845 (B06, Tue)
Chen, Shutang	947 (B07, Thu)	Chiu, Kuan-An	1446 (H01, Wed)	Chowdhury, Md Delwar Hossain	1449 (H01, Wed)
Chen, Ting	1933 (I06, Mon), 1934 (I06, Mon), 2359 (L05, Thu), 2591 (Z01, Tue)	Chiu, Kuo-Feng	95 (A01, Mon)	Christensen, Jake	1281 (F01, Mon), 1954 (I06, Tue)
Chen, Wei-Fu	1658 (I03, Mon)	Chiu, Wilson	1328 (F02, Tue), 1756 (I04, Tue)	Chu, Chih-Wei	284 (A03, Sun), 342 (A03, Mon)
Chen, Wen	2366 (L06, Mon)	Cho, Ahra	68 (A01, Mon)	Chu, Deryn	2208 (L02, Wed)
Chen, Wen-Chang	1539 (H04, Mon)	Cho, Byung Won	442 (A03, Wed), 552 (A03, Wed)	Chu, Terry	180 (A02, Tue), 229 (A02, Wed)
Chen, Wen-Jauh	514 (A03, Wed)	Cho, Byung Woo	238 (A02, Thu)		
Chen, Xia	1091 (C01, Wed)	Cho, Doo Hyeon	2635 (Z02, Wed)		
Chen, Xiaobo	1840 (I05, Sun)	Cho, EunByul	1033 (B09, Sun)		
Chen, Xiaolan	2518 (Z01, Tue)	Cho, Jaephil	293 (A03, Mon), 295 (A03, Mon)		
Chen, Xiaoting	2234 (L02, Thu)	Cho, Jaeseong	86 (A01, Mon)		
Chen, Xuehui	1513 (H03, Tue)	Cho, Jaewoo	1969 (I06, Tue)		
Chen, Xuyuan	1621 (I02, Wed)	Cho, Jangwhan	2603 (Z01, Tue)		
Chen, Yi-Hong	1485 (H03, Mon)	Cho, Jason	2589 (Z01, Tue)		
Chen, Yi-Ting	1483 (H03, Mon)	Cho, Jeong Ho	838 (B06, Tue)		
Chen, Yicong	446 (A03, Wed)	Cho, Jinwon	1804 (I04, Wed), 1812 (I04, Wed)		

Author Index

Author	Abs No.
Chu, Yen-Lin	2509 (M02, Tue)
Chu, Ying-Hao	1537 (H04, Mon), 1549 (H04, Tue)
Chuang, Abel	1680 (I03, Tue)
Chubarov, Mikhail	845 (B06, Tue)
Chueh, Chu-Chen	1539 (H04, Mon)
Chueh, William	231 (A02, Wed)
Chueh, Yu-Lun	609 (A04, Mon), 836 (B06, Mon), 1571 (H04, Wed), 1576 (H04, Wed)
Chueh, Yu-Lun	182 (A02, Tue), 2327 (L05, Tue)
Chumakov, Sergei	1954 (I06, Tue)
Chung, Chee Won	2635 (Z02, Wed), 2652 (Z03, Wed)
Chung, Dae Sung	2603 (Z01, Tue)
Chung, Daehan	1534 (H04, Mon)
Chung, Dong Young	1696 (I03, Wed), 2352 (L05, Wed)
Chung, Feng-Ju	182 (A02, Tue)
Chung, Hoon	1687 (I03, Wed), 1717 (I04, Sun), 1738 (I04, Sun), 2313 (L05, Tue), 2319 (L05, Tue)
Chung, Hyun-Joong	774 (B04, Tue), 2404 (M01, Tue)
Chung, Jui-Hui	1347 (F02, Wed)
Chung, Kyung Yoon	405 (A03, Tue), 442 (A03, Wed), 494 (A03, Wed), 552 (A03, Wed), 558 (A03, Wed)
Chung, Sunki	659 (B01, Tue)
Chung, Taek Dong	2523 (Z01, Tue), 2525 (Z01, Tue)
Chung, Wen-Yaw	1472 (H02, Tue)
Chung, Ya-Ting	1512 (H03, Tue)
Chung, Yun-Jung	860 (B06, Tue)
Chura, William	2528 (Z01, Tue)
Ciment, Max	1771 (I04, Tue)
Ciobanu, Cristian	839 (B06, Tue)
Citrin, Michael	325 (A03, Mon)
Ciucci, Francesco	3 (A01, Sun), 172 (A01, Thu), 1698 (I03, Wed), 2554 (Z01, Tue), 2642 (Z03, Wed), 2645 (Z03, Wed)
Clancy, Ian	2395 (L06, Tue)
Clare, Laurie	2033 (K01, Mon), 2034 (K01, Mon), 2068 (K03, Wed), 2583 (Z01, Tue)
Clark, Dexter	2087 (K03, Thu)
Clark, Michael	54 (A01, Mon)
Clark, Sue	2096 (L01, Mon)
Claude, Théo	722 (B03, Wed)
Claudiel, Fabien	1668 (I03, Tue)
Clement, Pierrick	742 (B03, Thu)
Clément, Raphaële	391 (A03, Tue)
Clites, Mallory	333 (A03, Mon), 452 (A03, Wed)
Cloutier, Jean-Noël	1271 (F01, Mon)
Co, Anne	634 (B01, Sun)
Coats, Erik	2263 (L03, Thu)
Coaty, Christopher	2365 (L06, Mon)
Cobb, Corie	487 (A03, Wed)
Cobley, Andrew	1293 (F01, Tue)
Cocco, Alex	1328 (F02, Tue)
Coelho, Dyovani	1098 (C01, Wed)
Coffer, Jeffery	2396 (L06, Tue)
Cognet, Laurent	675 (B02, Mon), 726 (B03, Wed)
Cohen-Karni, Tzahi	637 (B01, Sun), 664 (B02, Sun), 1025 (B09, Sun), 1520 (H03, Wed)
Cola, Baratunde	644 (B01, Mon), 645 (B01, Mon)
Cole, James	1353 (F02, Wed)
Cole, Kevin	1690 (I03, Wed)
Cole, Parker	2399 (L06, Tue)
Colella, Whitney	202 (A02, Tue), 1600 (I02, Wed)
Coleman, Eric	633 (B01, Sun), 2298 (L05, Mon)
Coleman, Jonathan	875 (B06, Wed)
Collins, Michael	690 (B02, Tue)
Collins, Philip	245 (A03, Sun), 740 (B03, Thu)
Colon-Mercado, Hector	1646 (I03, Mon)
Comparetto, Michael	2421 (M01, Tue), 2453 (M01, Wed)

Author	Abs No.
Conley, John	1186 (D02, Mon), 1187 (D02, Mon), 1188 (D02, Mon)
Connell, John	583 (A03, Thu)
Connell, Justin	262 (A03, Sun), 263 (A03, Sun)
Connor, Patrick	2570 (Z01, Tue)
Convertino, Clarissa	1381 (G01, Tue)
Cooke, Mike	1383 (G01, Tue)
Copley, Mark	371 (A03, Tue)
Coquand, Rémi	1370 (G01, Mon)
Corchado-Garcia, Juan	2287 (L04, Tue)
Cordeiro, Milton	2505 (M02, Tue)
Cording, Faye	222 (A02, Wed)
Cordon, Joshua	268 (A03, Sun)
Cornell, Ann	1272 (F01, Mon)
Cornes, Stuart	827 (B05, Thu)
Coroa, Joao	846 (B06, Tue)
Corral, Erica	2591 (Z01, Tue)
Cosnier, Serge	2333 (L05, Wed)
Cossairt, Brandi	1862 (I05, Tue)
Costa, Rémi	1597 (I02, Wed)
Coste, Philippe	2486 (M02, Mon)
Costentin, Cyrille	969 (B08, Sun)
Costentin, Cyrille	960 (B08, Sun)
Cottineau, Thomas	399 (A03, Tue)
Cottrill, Anton	648 (B01, Mon), 888 (B06, Thu), 1564 (H04, Wed), 2273 (L04, Mon)
Coughlin, E.	1749 (I04, Mon)
Coulot, Laurent	1821 (I05, Sun)
Cousens, Erin	2520 (Z01, Tue)
Coutanceau, Christophe	2299 (L05, Mon)
Couto Petro, Ana	2031 (K01, Mon)
Coyle, Jaclyn	38 (A01, Mon)
Cozzi, Chiara	1386 (G01, Tue)
Cozzolino, Daniel	2438 (M01, Wed)
Crawford, Alasdair J.	26 (A01, Mon)
Crawford, Sean	272 (A03, Sun)
Cremers, Carsten	1270 (F01, Mon)
Cresce, Arthur	387 (A03, Tue), 418 (A03, Tue)
Crisci, Alexandre	1779 (I04, Wed)
Cristiani, Pierangela	1048 (C01, Mon), 2258 (L03, Thu)
Crompton, Kyle	434 (A03, Tue)
Cronin, Stephen	745 (B03, Thu)
Crothers, Andrew	1362 (F02, Thu)
Crouch, Garrison	2126 (L01, Tue)
Crovetto, Andrea	1912 (I05, Thu)
Crowder, Chuck	2526 (Z01, Tue), 2527 (Z01, Tue)
Crowe, Iain	1159 (D01, Tue)
Croy, Jason	442 (A03, Wed)
Cruz, William	1467 (H02, Mon)
Cuadros Linares, Oscar	1098 (C01, Wed)
Cuche, Aurélien	1165 (D01, Wed)
Cuesta, Angel	2150 (L01, Wed)
Cugnet, Mikael	166 (A01, Thu)
Cui, Jiang	400 (A03, Tue), 413 (A03, Tue)
Cui, Miaomiao	1092 (C01, Wed)
Cui, Yanjie	466 (A03, Wed)
Cui, Yi	306 (A03, Mon), 1609 (I02, Wed)
Cullen, David	2342 (L05, Wed)
Culp, Jeffrey	2412 (M01, Tue)
Cuniberti, Gianarelio	1254 (E02, Wed)
Curtiss, Larry	358 (A03, Mon), 570 (A03, Thu)
Cushing, Scott	1863 (I05, Tue)
Cusick, Roland	109 (A01, Mon)
Cvelbar, Uros	1175 (D02, Mon), 1176 (D02, Mon)
Cvelbar, Uros	1179 (D02, Mon)
Cychosz, Katie	2374 (L06, Mon)
Czaplewski, David	1762 (I04, Tue)
Czerniawski, Justin	2098 (L01, Mon)
Czornomaz, Lukas	1381 (G01, Tue)

D

Author	Abs No.
D'Ambrose, Michael	140 (A01, Tue)
D'Amico, John	1384 (G01, Tue)
D'Epifanio, Alessandra	212 (A02, Tue), 213 (A02, Tue)
D'Souza, Francis	800 (B05, Wed), 910 (B07, Tue)
da Silva, Thiago	1097 (C01, Wed)
da Silva Lima, Ligia	1299 (F01, Tue)
Dabo, Ismaila	1329 (F02, Tue), 1338 (F02, Tue), 1339 (F02, Tue)
Dabral, Ashish	842 (B06, Tue)
Dahlström, Per Kristian	2224 (L02, Thu)
Dahn, Jeff	454 (A03, Wed)
Dai, Kehua	41 (A01, Mon)
Dai, Qiang	605 (A04, Mon), 616 (A04, Mon)
Dai, Sheng	516 (A03, Wed)
Dai, Tze-Yu	1487 (H03, Mon)
Dan, Dan	244 (A03, Sun)
Dang, Caroline	2476 (M02, Mon)
Dang, Dingying	1953 (I06, Tue)
Dang, Hai-Son	1750 (I04, Mon)
Dangerfield, Aaron	78 (A01, Mon), 79 (A01, Mon)
Danhausen, Dany	2527 (Z01, Tue)
Daniel, Claus	253 (A03, Sun)
Daniel, Lius	1767 (I04, Tue)
Danilova, Sofya	1293 (F01, Tue)
Danilovic, Nemanja	2168 (L02, Mon)
Danilovic, Nemanja	1808 (I04, Wed)
Danné, Noémie	726 (B03, Wed)
Dansereau, Spencer	1123 (C02, Tue)
Dansereau, Spencer	1137 (C02, Wed)
Dao, Van-Duong	777 (B04, Tue), 782 (B04, Tue), 1182 (D02, Mon)
Darby, Paul	2643 (Z03, Wed)
DaRos, Tatiana	686 (B02, Mon), 768 (B04, Mon)
Darzi, Ghazwan	2068 (K03, Wed)
Das, Avimanyu	2153 (L01, Wed)
Das, Biswajit	2602 (Z01, Tue), 2632 (Z02, Wed)
Daş, Elif	2300 (L05, Mon)
Das, Jagotamoy	2090 (K03, Thu)
Das, Sachindranath	142 (A01, Wed)
Das, Sanjana	2602 (Z01, Tue), 2632 (Z02, Wed)
Das, Saptarshi	851 (B06, Tue)
Das, Tridip	1940 (I06, Mon)
Das Sarma, Dipankar	146 (A01, Wed)
Dasgupta, Aritra	1463 (H02, Mon)
Dasgupta, Neil	479 (A03, Wed), 483 (A03, Wed), 1232 (E02, Tue)
Dastpak, Arman	1041 (C01, Mon)
Datta, Moni	6 (A01, Sun), 39 (A01, Mon), 40 (A01, Mon), 60 (A01, Mon), 1640 (I03, Mon)
Daum, Winfried	1926 (I05, Thu), 2290 (L04, Tue)
David, Lamuel	331 (A03, Mon)
David, Thomas	1172 (D01, Wed)
Davidi, Guy	561 (A03, Wed)
Davies, Daniel	183 (A02, Tue)
Davis, Andrew	479 (A03, Wed)
Davis, Benjamin	180 (A02, Tue), 229 (A02, Wed)
Davis, James	1316 (F01, Wed)
Davis, Jason	827 (B05, Thu)
Davis, Jonathan	2520 (Z01, Tue)
Davis, Paul	1097 (C01, Wed)
Davison, Cody	805 (B05, Wed)
Davoisne, Carine	120 (A01, Tue)
Dawood, Omar	2476 (M02, Mon)
Dawson, Jeremy	2408 (M01, Tue)
Dawson-Elli, Neal	1325 (F02, Tue), 1331 (F02, Tue)
Day, Brandon	1279 (F01, Mon), 2555 (Z01, Tue)
Day, Brian	6 (A01, Sun), 39 (A01, Mon), 40 (A01, Mon)
Day, Sarah	376 (A03, Tue)
De Andrade, Vincent	62 (A01, Mon), 352 (A03, Mon)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
De Feyter, Steven	848 (B06, Tue)	Di Natale, Corrado	993 (B08, Mon), 997 (B08, Mon)	Dong, Xiaoli	493 (A03, Wed)
De Gendt, Stefan	842 (B06, Tue), 846 (B06, Tue)	Di Noto, Vito	1758 (I04, Tue), 2289 (L04, Tue), 2302 (L05, Mon), 2334 (L05, Wed), 2341 (L05, Wed)	Donkeng, Joel	2030 (K01, Mon)
De Geyer, Arnaud	248 (A03, Sun)	Di Stefano, Davide	468 (A03, Wed)	Donnelly, Daniel	76 (A01, Mon), 215 (A02, Tue)
de Jongh, Petra	2377 (L06, Mon)	Dianat, Arezoo	1254 (E02, Wed)	Doorn, Stephen	719 (B03, Wed), 723 (B03, Wed), 724 (B03, Wed), 726 (B03, Wed), 727 (B03, Wed), 729 (B03, Wed)
de Kruijff, Goswinus	2037 (K01, Mon)	Diang, Jiang	342 (A03, Mon)	Dooryhee, Eric	316 (A03, Mon)
De Lacey, Antonio L.	1995 (I07, Mon)	Diau, Eric	904 (B07, Tue)	Dordi, Yezdi	1226 (E02, Mon)
De March, Claire	2091 (K03, Thu)	Díaz-Real, Jesús Adrián	2140 (L01, Wed)	Dorkis, Ludovic	2166 (L02, Mon)
De Oliveira, Adilson	1080 (C01, Tue)	Dickerson, Charles	596 (A03, Thu)	DorMohammad, Hossein	1099 (C01, Wed), 1100 (C01, Wed)
de Poulpiquet, Anne	2130 (L01, Tue)	Dickmann, Dan	2566 (Z01, Tue), 2569 (Z01, Tue)	Dorn, Harry	818 (B05, Thu)
De Silva, Umanga	1635 (I02, Thu), 1674 (I03, Tue)	Diddens, Diddo	257 (A03, Sun)	Dornbusch, Donald	575 (A03, Thu)
De Souza, Roger	1931 (I06, Mon)	Dillet, Jérôme	1745 (I04, Mon), 1795 (I04, Wed)	Döscher, Henning	1901 (I05, Thu)
De Struycker, Joost	1265 (E02, Wed)	Dimitrov, Nikolay	1243 (E02, Tue), 2163 (L02, Mon)	Dose, Wesley	466 (A03, Wed)
De Trizio, Luca	2105 (L01, Mon), 2124 (L01, Tue)	Dimoulas, Athanasios	824 (B06, Tue)	Dosi, Manan	2610 (Z01, Tue)
De Vito, Eric	612 (A04, Mon)	Dincă, Mircea	1220 (E01, Wed)	Doty, Frank	709 (B03, Tue)
De Vrieze, Mike	1176 (D02, Mon)	Dinescu, Gheorghe	1176 (D02, Mon)	Douglas, Erica	1413 (H01, Tue)
Dean, Patrick	2420 (M01, Tue)	Ding, Dong	1496 (H03, Tue), 1596 (I02, Wed)	Douglas, Lacey	79 (A01, Mon)
DeAngelis, Alexander	1855 (I05, Tue), 1884 (I05, Wed), 1929 (I05, Thu)	Ding, Fei	1234 (E02, Tue)	Douillard, Thierry	2271 (L04, Mon)
Deb, Biswapriya	1442 (H01, Wed)	Ding, Jia	141 (A01, Wed), 386 (A03, Tue)	Dow, Wei-Ping	1244 (E02, Tue)
Debela, Tekalign Terfa	335 (A03, Mon)	Ding, Michael	548 (A03, Wed)	Downard, Alison	189 (A02, Tue)
DeBruler, Camden	203 (A02, Tue)	Ding, Yi	148 (A01, Wed)	Doyle, Peter	1125 (C02, Tue)
DeBruler, Camden	220 (A02, Wed)	Dinh, Hung Cuong	946 (B07, Thu), 2189 (L02, Tue)	Drahi, Etienne	1310 (F01, Wed)
Dedigama, Ishanka	2589 (Z01, Tue)	Dinh, Huyen	1646 (I03, Mon)	Dreizler, Andreas	14 (A01, Sun)
Defillet, Joeri	699 (B03, Tue), 751 (B03, Thu)	Dinh Vu, Huy	1112 (C02, Mon)	Drnc, Jakub	2118 (L01, Tue)
Deguchi, Takashi	2283 (L04, Mon)	Dippon, Michael	132 (A01, Tue)	Drnc, Jakub	1783 (I04, Wed), 1817 (I04, Thu), 2203 (L02, Wed), 2611 (Z01, Tue)
Dekel, Dario	1727 (I04, Sun), 1778 (I04, Wed)	Dismukes, Gerard	1903 (I05, Thu)	Droz, Vadym	433 (A03, Tue)
Del Bonis-O'Donnell, Jackson Travis	676 (B02, Mon)	Dive, Aniruddha	171 (A01, Thu), 1333 (F02, Tue), 2600 (Z01, Tue)	Drummy, Lawrence	2426 (M01, Wed)
DeLacy, Brendan	1872 (I05, Tue)	Dixit, Mudit	310 (A03, Mon)	Drzymała, Elżbieta	2220 (L02, Thu)
Delage, Sylvain	1412 (H01, Mon)	Dixon, Kiev	471 (A03, Wed)	Du, Dan	317 (A03, Mon), 1024 (B09, Sun), 1154 (D01, Tue), 1683 (I03, Wed), 2367 (L06, Mon), 2473 (M02, Mon), 2482 (M02, Mon), 2501 (M02, Tue), 2549 (Z01, Tue)
Delannoy, Pierre-Emmanuel	4 (A01, Sun)	Dixon, Neil	2476 (M02, Mon)	Du, Kang	1621 (I02, Wed), 1924 (I05, Thu)
Delcamp, Jared	909 (B07, Tue)	Dizon, Arthur	1288 (F01, Tue)	Du, Kang	444 (A03, Wed)
Delen, Guusje	2371 (L06, Mon)	Djara, Vladimir	1464 (H02, Mon)	Du, Peng	2 (A01, Sun)
Delevich, Kristen	676 (B02, Mon)	Djenizian, Thierry	362 (A03, Mon), 399 (A03, Tue), 416 (A03, Tue), 1215 (E01, Wed)	Du, Pengfei	2494 (M02, Tue)
Deligianni, Hariklia (Lili)	1310 (F01, Wed), 2436 (M01, Wed)	Djilali, Ned	1968 (I06, Tue)	Du, Songtao	2445 (M01, Wed), 2446 (M01, Wed)
Delp, Samuel	290 (A03, Mon)	Do, Haika	2640 (Z03, Wed)	Duan, Wentao	230 (A02, Wed)
Delpont, Géraud	716 (B03, Wed), 932 (B07, Wed)	Do, Hien	1446 (H01, Wed)	Duan, Yuhua	1941 (I06, Mon)
Dembinska, Beata	2302 (L05, Mon), 2341 (L05, Wed), 2343 (L05, Wed)	Do, Jae-chul	1376 (G01, Mon)	Duay, Jonathan	2138 (L01, Wed)
Dementin, Sébastien	2248 (L03, Wed)	Do, Matthew	2091 (K03, Thu)	Dubau, Laetitia	1587 (I01, Wed), 1644 (I03, Mon), 1668 (I03, Tue), 1733 (I04, Sun), 1778 (I04, Wed), 1779 (I04, Wed), 1783 (I04, Wed), 2539 (Z01, Tue)
Demirer, Gozde	683 (B02, Mon)	Do, Nguyen	438 (A03, Mon)	Dubey, Deepak	1427 (H01, Tue)
Demortiere, Arnaud	62 (A01, Mon)	Doan, Huong	1702 (I03, Wed)	Dubey, Satya	517 (A03, Wed)
Dendooven, Jolien	1216 (E01, Wed)	Doche, Marie-Laure	1261 (E02, Wed)	Dubin, Val	1245 (E02, Tue)
Deng, Changjian	81 (A01, Mon)	Doerfler, Susanne	337 (A03, Mon)	Dubois, Marc	1733 (I04, Sun)
Deng, Huiqiu	343 (A03, Mon)	Dogan, Fulya	67 (A01, Mon), 80 (A01, Mon), 291 (A03, Mon), 360 (A03, Mon)	Dubreuil, Nicolas	1173 (D01, Wed)
Deng, Shun-Liu	810 (B05, Wed)	Doğan, Ömer	1105 (C02, Mon), 1106 (C02, Mon)	Dubrunfaut, Olivier	2271 (L04, Mon), 2272 (L04, Mon)
Dennis, John	823 (B05, Thu), 824 (B05, Thu)	Dogariu, Arthur	1177 (D02, Mon)	Duchamp, James	818 (B05, Thu)
Dennison, Christopher	179 (A02, Tue)	Dogutan, Dilek	969 (B08, Sun)	Duchatelet, Aurelien	1310 (F01, Wed)
Depciuch, Joanna	2220 (L02, Thu)	Dogutan Kiper, Dilek	960 (B08, Sun)	Duclairoir, Florence	467 (A03, Wed)
Derakhshan, Shahab	1982 (I06, Wed)	Doi, Takayuki	511 (A03, Wed)	Dueñas, Salvador	1465 (H02, Mon), 1475 (H02, Tue)
Deria, Pravas	963 (B08, Sun)	Dolejsi, Moshe	2295 (L04, Tue)	Dufek, Eric	121 (A01, Tue), 596 (A03, Thu), 604 (A03, Thu)
Dervishi, Enkeleda	859 (B06, Tue)	Dolisca, Andhel	2490 (M02, Tue)	Duffy, Timothy	1066 (C01, Tue)
DeSario, Paul	1871 (I05, Tue)	Domen, Kazunari	1888 (I05, Wed), 1891 (I05, Wed), 1913 (I05, Thu), 1922 (I05, Thu)	Dufour, Christian	1156 (D01, Tue)
Desbois, Nicolas	977 (B08, Sun)	Dominko, Robert	256 (A03, Sun)	Dufour, Nicolas	166 (A01, Thu)
Deschamps, Marc	585 (A03, Thu)	Donatelli, Joanna	2034 (K01, Mon)	Dumitrescu, Adina	224 (A02, Wed)
Deshusses, Marc	1308 (F01, Tue)	Donetti, Luca	1474 (H02, Tue)	Dumitrescu, Eduard	2437 (M01, Wed)
Deslouis, Claude	2466 (M01, Thu)	Doneux, Thomas	2130 (L01, Tue)	Dunaev, Anatoliy	2108 (L01, Mon)
Desrochers, David	1195 (E01, Tue)	Dong, Ban	1762 (I04, Tue), 2295 (L04, Tue)	Duncan, Josie	1035 (B09, Sun)
Detavernier, Christophe	1213 (E01, Wed), 1216 (E01, Wed)	Dong, Fang	1619 (I02, Wed)	Dunk, Paul	806 (B05, Wed)
Detsi, Eric	1951 (I06, Tue)	Dong, Jin-Chao	2182 (L02, Tue)	Dunkelberger, Adam	1871 (I05, Tue)
Deutsch, Todd	1883 (I05, Wed), 1901 (I05, Thu)	Dong, Juyao	731 (B03, Wed), 891 (B06, Thu)	Dunlap, R.	393 (A03, Tue)
Deva, Abhas	1346 (F02, Wed)	Dong, Kang	477 (A03, Wed)	Dunlop, Alison	253 (A03, Sun)
Devaguptapu, Surya	1695 (I03, Wed)	Dong, Panpan	301 (A03, Mon), 2596 (Z01, Tue)		
Devaraj, Neal	2095 (K03, Thu)	Dong, Panpan	420 (A03, Tue), 588 (A03, Thu), 2584 (Z01, Tue), 2594 (Z01, Tue)		
Devarakonda, Sivaranjani	2494 (M02, Tue)	Dong, Peng	447 (A03, Wed)		
Devkota, Jagannath	2412 (M01, Tue)	Dong, Shengyang	193 (A02, Tue)		
Deweese, Rachel	451 (A03, Wed)	Dong, Wei	790 (B05, Tue)		
DeWolf, Christine	1001 (B08, Tue)				
Dhar, Sarit	1441 (H01, Wed)				
Dharavath, Ravindar	318 (A03, Mon), 328 (A03, Mon)				
Di Carlo, Gabriella	1088 (C01, Wed)				
Di Lorenzo, Mirella	2072 (K03, Wed)				

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Dunn, Bruce	498 (A03, Wed)	Enache, Adrian	639 (B01, Sun)	Farac, Nina	617 (A04, Mon)
Dunn, Kathleen	1382 (G01, Tue)	Enache, Stanica	639 (B01, Sun)	Farha, Omar	2368 (L06, Mon)
Duong, Hieu	266 (A03, Sun), 365 (A03, Mon)	Enachescu, Marius	822 (B05, Thu)	Farina, Filippo	2340 (L05, Wed)
Duoss, Eric	192 (A02, Tue), 2366 (L06, Mon)	Endres, Frank	1209 (E01, Wed)	Fatanat Didar, Tohid	2429 (M01, Wed)
Duquette, David	1095 (C01, Wed)	Endrodi, Balazs	1272 (F01, Mon)	Fattakhova-Rohlfing, Dina	480 (A03, Wed)
Dura, Joseph	417 (A03, Tue)	Endrodi, Balazs	1880 (I05, Wed)	Faure, Mathilde	2466 (M01, Thu)
Duraichelvan, R.	2441 (M01, Wed)	Eng, Peter	2109 (L01, Mon)	Favre, Luc	1172 (D01, Wed)
Dushaq, Ghada	1373 (G01, Mon)	Engelhard, Mark	42 (A01, Mon), 448 (A03, Wed), 453 (A03, Wed), 548 (A03, Wed), 587 (A03, Thu)	Fay, Patrick	1405 (H01, Mon)
Dutta, Abhijit	1231 (E02, Tue)	Enright, Tyler	2158 (L01, Wed)	Faynot, Olivier	1370 (G01, Mon)
Dutta, Monica	1962 (I06, Tue)	Enriquez, Alexis	1982 (I06, Wed)	Feigelson, Boris	66 (A01, Mon), 1420 (H01, Tue)
Dutta, Prasit	411 (A03, Tue)	Enterria, Marina	579 (A03, Thu)	Feinberg, Adam	1520 (H03, Wed)
Duy, Le Thai	105 (A01, Mon)	Eom, Chang-Beom	1931 (I06, Mon)	Felici, Roberto	2118 (L01, Tue)
Dweik, Badawi	2433 (M01, Wed)	Eom, Ji-Yong	541 (A03, Wed)	Feliu, Juan	2330 (L05, Wed)
Dwibedi, Debasmitta	2307 (L05, Mon)	Eom, Kiryung	779 (B04, Tue), 903 (B07, Tue)	Feng, Chenkai	1701 (I03, Wed)
Dynys, Frederick	575 (A03, Thu)	Eom, Yu Kyung	653 (B01, Tue)	Feng, Jiemin	430 (A03, Tue)
		Epshteyn, Albert	2154 (L01, Wed)	Feng, Jiemin	603 (A03, Thu)
E		Er, Yan Hui Jasmine	1629 (I02, Thu)	Feng, Lai	792 (B05, Wed)
Earls, Theresa	1037 (B09, Tue)	Ercolano, Giorgio	2340 (L05, Wed)	Feng, Ruozyu	2077 (K03, Wed)
Eastcott, Jennie	2375 (L06, Mon)	Erdogan, Metehan	1295 (F01, Tue), 1305 (F01, Tue)	Feng, Shuo	317 (A03, Mon), 1024 (B09, Sun)
Eastcott, Jennie	1771 (I04, Tue)	Erickson, Evan	310 (A03, Mon)	Feng, Shuting	578 (A03, Thu), 2276 (L04, Mon)
Eaton, Gareth	827 (B05, Thu)	Erickson, Marilyn	2472 (M01, Thu)	Feng, Tao	1091 (C01, Wed)
Eaton, Sandra	827 (B05, Thu)	Erlebacher, Jonah	2345 (L05, Wed)	Feng, Yingzi	375 (A03, Tue)
Ebaugh, Thomas	2281 (L04, Mon), 2449 (M01, Wed)	Ersal, Tulga	1988 (I06, Wed)	Feng, Zhange	59 (A01, Mon), 176 (A01, Thu)
Ebnonnasir, Abbas	839 (B06, Tue)	Ersoy, Merve	1295 (F01, Tue)	Feng, Zhenxing	1825 (I05, Sun), 2197 (L02, Wed)
Echegoyen, Luis	622 (B01, Sun), 791 (B05, Wed), 792 (B05, Wed), 804 (B05, Wed), 806 (B05, Wed), 817 (B05, Thu), 916 (B07, Tue)	Escobar, Alberto	2543 (Z01, Tue)	Fenini, Filippo	1661 (I03, Mon)
Eckstein, Chris	2499 (M02, Tue)	Escudero-Escribano, María	2214 (L02, Wed), 2316 (L05, Tue)	Fenouillet-Beranger, Claire	1462 (H02, Mon)
Eckstein, Klaus	748 (B03, Tue)	Esposito, Daniel	1875 (I05, Wed), 2520 (Z01, Tue)	Fergus, Jeffrey	1120 (C02, Tue), 2544 (Z01, Tue)
Eddy, Charles	1407 (H01, Mon)	Estrada, David	1578 (H04, Wed)	Ferguson, Andrew	646 (B01, Mon), 660 (B01, Tue), 738 (B03, Thu), 751 (B03, Thu)
Edelman, Piotr	1384 (G01, Tue)	Etaouil, Abdeslam	1297 (F01, Tue)	Fermin, David	1225 (E02, Mon), 1925 (I05, Thu)
Edström, Kristina	392 (A03, Tue)	Etcheberry, Arnaud	1412 (H01, Mon), 2151 (L01, Wed)	Fernandez, Renny	2477 (M02, Mon)
Edvinsson, Tomas	1678 (I03, Tue)	Etiemble, Aurelien	473 (A03, Wed), 2271 (L04, Mon)	Fernandez, Vincent	585 (A03, Thu)
Eerdun, Chaolu	1003 (B08, Tue)	Evans, Kenneth	1053 (C01, Mon)	Fernandez-Delgado, Olivia	916 (B07, Tue)
Efaw, Corey	1097 (C01, Wed)	Evseev, Anatoly	2078 (K03, Wed), 2079 (K03, Wed)	Ferraro, Mark	134 (A01, Tue), 135 (A01, Tue), 173 (A01, Thu)
Effat, Mohammed	2554 (Z01, Tue), 2642 (Z03, Wed)			Ferré-Borrull, Josep	1523 (H03, Wed), 2397 (L06, Tue), 2499 (M02, Tue)
Egbert, Jonathan	1822 (I05, Sun)	F		Ferre-Vilaplana, Adolfo	2330 (L05, Wed)
Egorov-Brening, Tatjana	1805 (I04, Wed)	F. Rodrigues, Marco-Tulio	464 (A03, Wed)	Ferreira, Leonel	1261 (E02, Wed)
Ehre, Florian	1156 (D01, Tue)	Fabbri, Emiliana	1676 (I03, Tue)	Ferreira, Mario	1206 (E01, Wed)
Eichhorn, S. Holger	1001 (B08, Tue)	Fabbricino, Massimiliano	1063 (C01, Tue), 1064 (C01, Tue)	Ferreira, Paulo	425 (A03, Tue)
Eidson, Nicolas	418 (A03, Tue)	Fabian, David	2284 (L04, Tue)	Ferreira, Gomes, Franck	133 (A01, Tue)
Eikerling, Michael	1359 (F02, Thu), 1364 (F02, Thu), 2304 (L05, Mon)	Fadel, Mariam	2112 (L01, Mon)	Ferrere, Suzanne	853 (B06, Tue)
Eiler, Stephanie	225 (A02, Wed)	Faegh, Ehsan	57 (A01, Mon)	Ferri, Nicolo	2275 (L04, Mon)
Ein-Eli, Yair	416 (A03, Tue)	Fagan, Jeffrey	512 (A03, Wed), 713 (B03, Wed)	Ferry, Vivian	1150 (D01, Mon)
Einarsrud, Kristian	170 (A01, Thu), 1366 (F02, Thu)	Fagnoni, Justin	154 (A01, Wed)	Ficca, Valerio	213 (A02, Tue)
Einert, Marcus	1905 (I05, Thu)	Faguy, Peter	2199 (L02, Wed)	Fiechter, Sebastian	1854 (I05, Mon)
Eisele, Max	872 (B06, Wed)	Fahy, Kieran	219 (A02, Wed), 1742 (I04, Mon), 1784 (I04, Wed)	Filipič, Gregor	1179 (D02, Mon)
Eisner, Claire	2286 (L04, Tue)	Faid, Alaa	1806 (I04, Wed)	Filipovic, Lado	1469 (H02, Tue)
Eklöf, Johnas	742 (B03, Thu)	Fairley, Neal	585 (A03, Thu)	Filippone, Salvatore	799 (B05, Wed)
El Hannach, Mohamed	1992 (I06, Wed)	Falconi, Christian	1567 (H04, Wed)	Findlay, Andrew	1384 (G01, Tue)
El kaddouri, Assma	1795 (I04, Wed)	Fallatah, Ahmad	2424 (M01, Wed)	Findlay, Melvin	2417 (M01, Tue)
EL Mejdoubi, Asmae	201 (A02, Tue)	Fan, Fengru	1495 (H03, Mon)	Fini, Christine	1198 (E01, Tue)
El Sawy, Ehab	2384 (L06, Tue)	Fan, Guodong	46 (A01, Mon)	Fini, Daniel	1598 (I02, Wed)
El Sawy, Ehab	2172 (L02, Mon)	Fan, Jiawei	919 (B07, Tue)	Finsterbusch, Martin	480 (A03, Wed)
El-kady, Maher	2547 (Z01, Tue), 2578 (Z01, Tue)	Fan, Lijun	1975 (I06, Tue)	Fiori, Gianluca	895 (B06, Thu)
El-Naggar, Mohamed	2092 (K03, Thu)	Fan, Mengdi	1350 (F02, Wed)	Firmansyah, Dikhi	974 (B08, Sun)
El-Sawy, Ehab	2386 (L06, Tue)	Fan, Mengyang	1625 (I02, Thu)	Fischer, Anna	1730 (I04, Sun)
Elango, Rakesh	62 (A01, Mon)	Fan, Xing	1509 (H03, Tue)	Fiset, Erika	1299 (F01, Tue)
Elbaz, Lior	966 (B08, Sun), 2301 (L05, Mon)	Fan, Yueying	2361 (L05, Thu)	Fisher, Adam	2385 (L06, Tue)
Elemans, Johannes	1006 (B08, Tue)	Fan, Zhiyong	1577 (H04, Wed)	Fister, Timothy	259 (A03, Sun), 260 (A03, Sun), 2122 (L01, Tue)
Elgammal, Ramez	1628 (I02, Thu), 2631 (Z02, Wed)	Fan Chiang, Shao-Chi	1432 (H01, Tue)	Flahaut, Emmanuel	677 (B02, Mon)
Elliott, Corrine	228 (A02, Wed)	Fanavoll, Espen	2489 (M02, Tue)	Flake, John	1824 (I05, Sun)
Elliott, Graham	183 (A02, Tue)	Fang, Chun	518 (A03, Wed)	Flavel, Benjamin	698 (B03, Tue)
Ellis, Leah	454 (A03, Wed)	Fang, Qiyin	2467 (M01, Thu)	Fleck, Robert	222 (A02, Wed)
Ellmer, Klaus	1854 (I05, Mon)	Fang, Shan	470 (A03, Wed)	Fleming, Joe	2413 (M01, Tue)
Elnabawy, Ahmed	2164 (L02, Mon)	Fang, Yi	2406 (M01, Tue)	Fleury, Xavier	118 (A01, Tue)
Elsener, Bernhard	1051 (C01, Mon)	Fang, Yuxin	1824 (I05, Sun)	Flewitt, Andrew J.	1449 (H01, Wed)
Elumalai, Ganesan	946 (B07, Thu), 2189 (L02, Tue)	Fanjul Bolado, Pablo	2119 (L01, Tue), 2456 (M01, Wed)	Flitsiyana, Elena	1423 (H01, Tue)
				Fofana, Daouda	2386 (L06, Tue)
				Fologea, Daniel	2491 (M02, Tue)
				Fonseca, Fabio	1593 (I01, Wed)
				Fontenot, Ross	2643 (Z03, Wed)

Author Index

Author.....	Abs No.	Author.....	Abs No.	Author.....	Abs No.	
Fontmorin, Jean-Marie.....	2247 (L03, Wed)	Fullerton, Susan.....	885 (B06, Wed)	Garcia-Perez, Tsai.....	2246 (L03, Wed)	
Foord, John.....	1708 (I03, Thu), 1907 (I05, Thu)	Fulton, John.....	1634 (I02, Thu)	Garcia-Santiago, Xavier.....	1164 (D01, Wed)	
Forcherio, Gregory.....	2618 (Z02, Wed)	Funayama, Keita.....	1957 (I06, Tue)	Garfunkel, Eric.....	1903 (I05, Thu)	
Ford, Hunter.....	255 (A03, Sun)	Fung, Kuan-Zong.....	33 (A01, Mon)	Garg, Anita.....	1128 (C02, Tue)	
Fornasiero, Francesco.....	703 (B03, Tue)	Funk, Nicole.....	2427 (M01, Wed)	Garg, Raghav.....	637 (B01, Sun), 664 (B02, Sun), 1025 (B09, Sun)	
Fornasiero, Paolo.....	813 (B05, Wed)	Furukawa, Hidemitsu.....	2405 (M01, Tue), 2409 (M01, Tue), 2450 (M01, Wed), 2452 (M01, Wed), 2460 (M01, Wed), 2480 (M02, Mon), 2483 (M02, Mon)	Garich, Holly.....	1316 (F01, Wed), 1321 (F01, Wed)	
Former-Cuenca, Antoni.....	226 (A02, Wed), 1793 (I04, Wed)	Furukawa, Rei.....	2410 (M01, Tue)	Garland, Nancy.....	2176 (L02, Tue)	
Forouzan, Mehdi.....	363 (A03, Mon)	Fusco, Michael.....	1087 (C01, Wed)	Garlisi, Corrado.....	1876 (I05, Wed)	
Forouzandeh, Farisa.....	2387 (L06, Tue)	G			Garrick, Taylor.....	1345 (F02, Wed)
Forouzani, Neda.....	1382 (G01, Tue)	Gaberscek, Miran.....	1073 (C01, Tue), 1088 (C01, Wed)	Garrido, Blas.....	1167 (D01, Wed)	
Forslund, Robin.....	1675 (I03, Tue), 2016 (I07, Tue)	Gaboriau, Dorian.....	147 (A01, Wed)	Garrigue, Patrick.....	2130 (L01, Tue)	
Fortier, Skie.....	791 (B05, Wed)	Gade, Narendar.....	2094 (K03, Thu)	Garsany, Yannick.....	1589 (I01, Wed)	
Fortin, Patrick.....	1909 (I05, Thu)	Gago, Aldo.....	15 (A01, Sun)	Garzon, Fernando.....	2007 (I07, Tue), 2008 (I07, Tue), 2012 (I07, Tue), 2337 (L05, Wed)	
Fossard, Frederic.....	677 (B02, Mon)	Gaieck, William.....	1890 (I05, Wed)	Gaskey, Bernard.....	2345 (L05, Wed)	
Foster, Kate.....	1077 (C01, Tue)	Gaikwad, Mayur.....	1027 (B09, Sun)	Gasteiger, Hubert.....	63 (A01, Mon), 139 (A01, Tue), 376 (A03, Tue), 402 (A03, Tue), 488 (A03, Wed), 1721 (I04, Sun), 2567 (Z01, Tue)	
Foster, Shelby.....	2002 (I07, Mon)	Gailhanou, Marc.....	1172 (D01, Wed)	Gates, Byron.....	375 (A03, Tue), 1638 (I03, Mon), 1673 (I03, Tue), 2375 (L06, Mon)	
Fourmond, Vincent.....	2248 (L03, Wed)	Gaillard, Nicolas.....	1855 (I05, Tue), 1884 (I05, Wed), 1929 (I05, Thu)	Gattu, Bharat.....	6 (A01, Sun), 39 (A01, Mon), 40 (A01, Mon), 60 (A01, Mon)	
Fowler, Michael.....	2610 (Z01, Tue)	Gaines, Linda.....	605 (A04, Mon), 607 (A04, Mon), 616 (A04, Mon)	Gaudet, Julie.....	1700 (I03, Wed)	
Fowler, Michael.....	2558 (Z01, Tue)	Gajewska, Agnieszka.....	768 (B04, Mon)	Gaudiello, John.....	1370 (G01, Mon)	
Fragkos, Sotiris.....	843 (B06, Tue)	Galassi, Thomas.....	674 (B02, Mon), 746 (B03, Thu)	Gaufres, Etienne.....	677 (B02, Mon)	
Francis, Daniel.....	1415 (H01, Tue)	Gale, Bruce.....	1545 (H04, Tue)	Gauthier, Véronique.....	476 (A03, Wed)	
Francis, Michael.....	1932 (I06, Mon)	Galindo de la Rosa, Juan de Dios.....	2493 (M02, Tue)	Gautier, Laurent.....	2271 (L04, Mon)	
Franco, Alejandro.....	1714 (I03, Thu)	Galiote, Nelson.....	2190 (L02, Tue)	Gazdzicki, Pawel.....	14 (A01, Sun)	
Franco, Juliana.....	1071 (C01, Tue)	Galito, Samuel.....	1749 (I04, Mon)	Ge, Le.....	59 (A01, Mon)	
Franger, Sylvain.....	133 (A01, Tue), 2271 (L04, Mon)	Gallagher, James.....	1407 (H01, Mon), 1409 (H01, Mon)	Ge, Mingyuan.....	1077 (C01, Tue)	
Frank, Steven.....	1279 (F01, Mon)	Galloway, Joshua.....	140 (A01, Tue), 2572 (Z01, Tue)	Ge, Ruijing.....	896 (B06, Thu)	
Franklin, Aaron.....	878 (B06, Wed)	Galloway, Thomas.....	2182 (L02, Tue)	Ge, Yu.....	834 (B06, Mon)	
Fraser, James.....	1706 (I03, Thu)	Galoppini, Elena.....	984 (B08, Mon), 1849 (I05, Mon)	Gebhardt, Ryan.....	88 (A01, Mon)	
Frederiksen, Rune.....	674 (B02, Mon), 746 (B03, Thu)	Galvan, Vicente.....	1731 (I04, Sun), 1735 (I04, Sun)	Geboes, Bart.....	1207 (E01, Wed)	
Fredrickson, Guy.....	1279 (F01, Mon)	Galvez-Aranda, Diego.....	432 (A03, Tue)	Geerpuram, Dwarakanath.....	1419 (H01, Tue), 1421 (H01, Tue)	
Free, Michael.....	1294 (F01, Tue)	Gamarra, Piero.....	1412 (H01, Mon)	Geise, Natalie.....	595 (A03, Thu), 599 (A03, Thu), 1348 (F02, Wed)	
Freeland, John.....	360 (A03, Mon)	Gambacorti, Narciso.....	1370 (G01, Mon)	Geisz, John.....	1901 (I05, Thu)	
Frégnaux, Mathieu.....	2151 (L01, Wed)	Gamby, Jean.....	2466 (M01, Thu)	Gelb, Jeff.....	269 (A03, Sun), 2338 (L05, Wed)	
Frei, Heinz.....	1845 (I05, Mon)	Gamiz, Francisco.....	1474 (H02, Tue)	Gellett, Wayne.....	1595 (I02, Wed), 2013 (I07, Tue), 2015 (I07, Tue)	
Freitas, Jaime.....	1420 (H01, Tue)	Gan, Hong.....	316 (A03, Mon)	Geniès, Sylvie.....	118 (A01, Tue)	
Frensch, Steffen.....	1665 (I03, Tue)	Gan, Lin.....	2349 (L05, Wed)	Genorio, Bostjan.....	2168 (L02, Mon)	
Friberg, Bradley.....	1987 (I06, Wed)	Gan, LU.....	1133 (C02, Tue), 1135 (C02, Tue)	Genovese, Matthew.....	2390 (L06, Tue)	
Friedl, Jochen.....	222 (A02, Wed), 2026 (K01, Mon), 2274 (L04, Mon)	Gan, Tian.....	1976 (I06, Tue)	Gentile, Pascal.....	147 (A01, Wed), 1172 (D01, Wed)	
Friedman, Ariel.....	2301 (L05, Mon)	Gan, Yuan.....	1656 (I03, Mon)	Georgescu, Nicholas.....	2207 (L02, Wed)	
Friedrich, Franziska.....	376 (A03, Tue)	Ganapathysubramaniam, Baskar.....	2494 (M02, Tue)	Gerdes, Kirk.....	2361 (L05, Thu)	
Friedrich, Kaspar.....	14 (A01, Sun), 15 (A01, Sun), 1769 (I04, Tue)	Ganesh, Gayathri.....	1442 (H01, Wed)	Gerhardt, Michael.....	1752 (I04, Tue)	
Frigerio, Jacopo.....	1173 (D01, Wed)	Gang, Oleg.....	2184 (L02, Tue)	Gerlich, Florian.....	1821 (I05, Sun)	
Frilay, Cédric.....	1156 (D01, Tue)	Ganin, Alexey.....	1706 (I03, Thu)	Gervais, Guillaume.....	883 (B06, Wed)	
Fronheiser, Jody.....	1368 (G01, Mon)	Gannon, Paul.....	1123 (C02, Tue), 1137 (C02, Wed)	Gerwe, Brian.....	1938 (I06, Mon), 1939 (I06, Mon)	
Fu, Chun-Chien.....	533 (A03, Wed)	Ganter, Matthew.....	131 (A01, Tue)	Gewirth, Andrew.....	1252 (E02, Wed), 1630 (I02, Thu), 1955 (I06, Tue), 1956 (I06, Tue), 2186 (L02, Tue)	
Fu, Donglong.....	2371 (L06, Mon)	Gao, Baizhen.....	1397 (G01, Tue)	Ghadbeigi, Leila.....	2639 (Z03, Wed)	
Fu, Huo.....	355 (A03, Mon)	Gao, Guohua.....	2612 (Z01, Tue)	Ghadge, Shrinath.....	1640 (I03, Mon)	
Fu, Jie.....	2230 (L02, Thu)	Gao, Han.....	59 (A01, Mon)	Ghayour, Rahim.....	886 (B06, Wed)	
Fu, Jintao.....	1951 (I06, Tue)	Gao, Lijun.....	361 (A03, Mon)	Ghazinejad, Maziar.....	1033 (B09, Sun)	
Fu, Kaiyu.....	2126 (L01, Tue), 2500 (M02, Tue)	Gao, Mengyao.....	1539 (H04, Mon)	Ghazinejad, Maziar.....	666 (B02, Sun)	
Fu, Shaofang.....	1683 (I03, Wed)	Gao, Ping.....	1757 (I04, Tue)	Ghebremichael, Habte.....	1623 (I02, Wed)	
Fu, Xuewei.....	415 (A03, Tue)	Gao, Pu-Xian.....	1517 (H03, Wed)	Ghil, Lee-Jin.....	1802 (I04, Wed)	
Fu, Yongzhu.....	300 (A03, Mon)	Gao, Wei.....	1555 (H04, Tue), 1740 (I04, Mon)	Ghobadi, Sajjad.....	2300 (L05, Mon)	
Fuchiwaki, Yusuke.....	2475 (M02, Mon)	Gao, X.....	1289 (F01, Tue), 2354 (L05, Thu)	Ghobrial, Samy.....	1712 (I03, Thu)	
Fuchs, David.....	211 (A02, Tue)	Gao, Xuefei.....	2498 (M02, Tue)	Ghosh, A.....	2441 (M01, Wed)	
Fuchs, Timo.....	2611 (Z01, Tue)	Gao, Yan.....	427 (A03, Tue)	Ghosh, Debasis.....	2604 (Z01, Tue)	
Fugivara, Cecilio.....	1082 (C01, Tue), 1309 (F01, Tue), 2565 (Z01, Tue), 2579 (Z01, Tue)	Gao, Yifan.....	270 (A03, Sun), 348 (A03, Mon)	Ghosh, Souvik.....	2014 (I07, Tue)	
Fujigaya, Tsuyohiko.....	650 (B01, Mon)	Gao, Yong.....	1397 (G01, Tue)	Ghosh, Sujoy.....	2485 (M02, Mon)	
Fujii, Minoru.....	1160 (D01, Tue)	Gao, Zhenghong.....	726 (B03, Wed)	Ghuman, Alyssa.....	2474 (M02, Mon)	
Fujimoto, Cy.....	1687 (I03, Wed), 1738 (I04, Sun)	Garbarino, Sebastien.....	1625 (I02, Thu), 1700 (I03, Wed)	Giddey, Sarbjit.....	1598 (I02, Wed)	
Fujiwara, Haruka.....	1372 (G01, Mon)	Garcia, Juan.....	67 (A01, Mon), 291 (A03, Mon), 358 (A03, Mon)	Gigandet, Marie-Pierre.....	1261 (E02, Wed)	
Fujiwara, Yasufumi.....	1401 (H01, Mon)	García, R. Edwin.....	1346 (F02, Wed)	Gigli, Carlo.....	673 (B02, Mon)	
Fukazawa, Atsushi.....	2046 (K01, Tue), 2047 (K01, Tue)	García Lastra, Juan.....	401 (A03, Tue), 2270 (L04, Mon)			
Fukunaka, Yasuhiro.....	1237 (E02, Tue)	Garcia-Basabe, Yunier.....	1803 (I04, Wed)			
Fukushima, Takanori.....	937 (B07, Wed)					
Fukuta, Ryuichiro.....	100 (A01, Mon)					
Fukuzumi, Yuya.....	24 (A01, Mon), 28 (A01, Mon)					
Fuladpanjeh-Hojaghan, Behzad.....	1287 (F01, Tue)					
Fuller, Thomas.....	1363 (F02, Thu)					

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Gigli, Matteo	212 (A02, Tue), 213 (A02, Tue)	Gonzalez Solano, Geraldine	2493 (M02, Tue)	Greer, Julia	252 (A03, Sun), 325 (A03, Mon)
Gillen, Alice	673 (B02, Mon), 680 (B02, Mon), 747 (B03, Thu)	Gonzalez-Malabet, Hernando	352 (A03, Mon), 439 (A03, Tue)	Gregorkiewicz, Tom	1143 (D01, Mon)
Gillette, Eleanor	1230 (E02, Mon)	Gonzalez-Rodriguez, Roberto	669 (B02, Sun), 681 (B02, Mon), 693 (B02, Tue), 2396 (L06, Tue)	Greve, David	2412 (M01, Tue)
Gilroy, Joseph	2022 (K01, Mon)	Gonze, Xavier	468 (A03, Wed)	Grew, Kyle	1328 (F02, Tue), 1756 (I04, Tue), 2277 (L04, Mon), 2618 (Z02, Wed)
Gim, Jihyeon	59 (A01, Mon)	Go, Youngmo	1977 (I06, Tue)	Grigsby, Curt	2426 (M01, Wed)
Gimenez, Salvador	1466 (H02, Mon), 1467 (H02, Mon)	Goode, Angela	1042 (C01, Mon), 1784 (I04, Wed)	Grimaudo, Valentine	1259 (E02, Wed)
Giordani, Vincent	252 (A03, Sun)	Goodyear, Andy	1383 (G01, Tue)	Grinblat, Judith	310 (A03, Mon)
Giraldo, Juan Pablo	2415 (M01, Tue)	Gopalan, Padma	714 (B03, Wed)	Grissa, Rabeb	585 (A03, Thu)
Girard, Christian	1165 (D01, Wed)	Gopalan, Raghavan	44 (A01, Mon)	Griva, Igor	2070 (K03, Wed)
Girault, Hubert	179 (A02, Tue), 2065 (K03, Wed)	Gopalan, Srikanth	1936 (I06, Mon), 2630 (Z02, Wed)	Grobert, Nicole	421 (A03, Tue)
Giri, Ramesh	2347 (L05, Wed)	Gordon, Reuven	1148 (D01, Mon)	Gros, Claude	977 (B08, Sun)
Girma, Wubshet	691 (B02, Tue)	Gordon, Roy	22 (A01, Sun)	Grossman, Jeffrey	850 (B06, Tue), 868 (B06, Wed)
Girón, Rosa	799 (B05, Wed)	Goroncharovskaya, Irina	2078 (K03, Wed), 2079 (K03, Wed)	Grover, Nitika	1022 (B08, Tue)
Gitkis, Anna	2042 (K01, Tue)	Gosai, Agnivo	2432 (M01, Wed)	Grover, Nitika	980 (B08, Sun)
Giuliani, Chiara	1088 (C01, Wed)	Goshtasbi, Alireza	1988 (I06, Wed)	Grubbs, Jackson	1037 (B09, Tue)
Glaser, Evan	1420 (H01, Tue)	Goto, Masahide	1470 (H02, Tue)	Gruber, Cynthia	1259 (E02, Wed)
Glaser, Rebecca	61 (A01, Mon)	Gotow, Takahiro	1457 (H02, Mon)	Grueneis, Alexander	883 (B06, Wed)
Glass, Dean	1731 (I04, Sun), 1735 (I04, Sun)	Gottesfeld, Shimshon	2195 (L02, Wed)	Grugeon, Sylvie	120 (A01, Tue)
Glass, Jeffrey	1308 (F01, Tue), 2091 (K03, Thu)	Gottfried, J. Michael	976 (B08, Sun)	Grunlan, Jaime	647 (B01, Mon)
Gleyzes, Christine	1263 (E02, Wed)	Goudeau, Bertrand	2130 (L01, Tue)	Grunow, Stephan	1183 (D02, Mon)
Glossmann, Tobias	278 (A03, Sun)	Goulet, Marc-Antoni	22 (A01, Sun)	Grutter, Peter	2158 (L01, Wed)
Gluschenkov, Oleg	1369 (G01, Mon)	Gourbilleau, Fabrice	1156 (D01, Tue)	Gruzel, Grzegorz	2218 (L02, Thu), 2220 (L02, Thu)
Go, David	2003 (I07, Mon)	Govind, Rakesh	613 (A04, Mon)	Gschwend, Gregoire	2065 (K03, Wed)
Go, Dohyun	1807 (I04, Wed)	Govorov, Alexander	1153 (D01, Tue), 1865 (I05, Tue)	Gu, Jingying	2055 (K03, Tue)
Gobbo, Pierangelo	2022 (K01, Mon)	Govorov, Dmitrii	2108 (L01, Mon)	Gu, Shuang	2009 (I07, Tue)
Gobet, Mallory	106 (A01, Mon), 498 (A03, Wed), 569 (A03, Thu)	Gowravaram, Mohan rao	326 (A03, Mon)	Gu, Siyuan	1405 (H01, Mon)
Godin, Antoine	726 (B03, Wed)	Goyal, Priyamvada	1990 (I06, Wed)	Gu, Tiantian	537 (A03, Wed)
Godinez-Salomon, Fernando	2205 (L02, Wed)	Goyal, Rajendra	2454 (M01, Wed)	Gu, Wenbin	1796 (I04, Wed)
Goenaga, Gabriel	198 (A02, Tue), 1777 (I04, Wed), 2257 (L03, Thu), 2293 (L04, Tue)	Gozen, Arda	2482 (M02, Mon)	Gu, Wentian	267 (A03, Sun)
Goerigk, Günter	652 (B01, Tue)	Graaf, Matthew	2032 (K01, Mon), 2077 (K03, Wed)	Gu, Yanhong	1045 (C01, Mon)
Gofer, Yosef	261 (A03, Sun)	Grace, Iain	985 (B08, Mon)	Gualous, Hamid	201 (A02, Tue)
Gogotsi, Yury	1739 (I04, Mon), 2536 (Z01, Tue), 1136 (C02, Wed)	Graciano, Vinicius	1981 (I06, Wed)	Guan, Pengjian	1959 (I06, Tue)
Gogyo, Yuma	100 (A01, Mon)	Grady, Kelsey	198 (A02, Tue)	Guan, Xiaofei	36 (A01, Mon)
Goh, Bonita	1124 (C02, Tue), 2470 (M01, Thu)	Gradzka, Emilia	822 (B05, Thu)	Guarr, Thomas	224 (A02, Wed)
Gokken, Dincer	1230 (E02, Mon)	Graef, Edward	1190 (D02, Mon)	Guay, Daniel	1625 (I02, Thu), 1700 (I03, Wed)
Gokhale, Rohan	2347 (L05, Wed)	Graetzel, Michael	1622 (I02, Wed)	Gubler, Lorenz	1793 (I04, Wed)
Gokus, Tobias	872 (B06, Wed)	Grave, Olivia	1168 (D01, Wed)	Guduru, Pradeep	1949 (I06, Tue)
Goldberg, Ben	1177 (D02, Mon)	Graf, Matthias	1984 (I06, Wed)	Guéguen, Aurélie	322 (A03, Mon)
Golden, Joel	2259 (L03, Thu)	Graf, Tanja	1720 (I04, Wed)	Gueon, Donghee	656 (B01, Tue)
Goldin, Mark	2078 (K03, Wed), 2079 (K03, Wed)	Graham, Kenneth	917 (B07, Tue)	Guerin, Katia	1733 (I04, Sun)
Goldstone, John	2066 (K03, Wed)	Graham, Matt	870 (B06, Wed)	Guerra, Carolina	1102 (C01, Wed)
Golodnitsky, Diana	561 (A03, Wed)	Grand, Pierre Philippe	1310 (F01, Wed)	Guilleme, Julia	982 (B08, Mon)
Golrokh Amin, Bahar	1635 (I02, Thu)	Granitzer, Petra	1161 (D01, Tue), 2394 (L06, Tue), 2396 (L06, Tue)	Guillon, Olivier	480 (A03, Wed)
Gomeniuk, Y.	1464 (H02, Mon)	Grassini, Sabrina	1048 (C01, Mon)	Guillot, Sarah	573 (A03, Thu)
Gomeniuk, Yuri	1464 (H02, Mon)	Grate, Jay	2497 (M02, Tue)	Guisinger, Nathan	840 (B06, Tue)
Gomes Chagas, Luciana	129 (A01, Tue)	Graule, Thomas	1676 (I03, Tue)	Guldi, Dirk	641 (B01, Mon), 797 (B05, Wed), 982 (B08, Mon)
Gomez, Adrian	2041 (K01, Tue)	Gravely, Mitch	679 (B02, Mon)	Gullette, Emily	1038 (B09, Tue)
Gomez, Maria	791 (B05, Wed)	Graverson, Carolyn	2566 (Z01, Tue)	Gulzar, U.	654 (B01, Tue)
Gomez Gonzalez, Miguel	219 (A02, Wed)	Graves, John	1293 (F01, Tue)	Gund, Girish	2536 (Z01, Tue)
Gomez-Marin, Ana	2166 (L02, Mon)	Gray, Bonnie	1534 (H04, Mon), 2478 (M02, Mon)	Guo, Changqing	1657 (I03, Mon)
Gonçalves, Anne-Marie	1310 (F01, Wed), 2151 (L01, Wed)	Graybill, Joshua	1987 (I06, Wed)	Guo, Fangmin	1736 (I04, Sun)
Gonçalves, Gonçalo	847 (B06, Tue)	Grayli, Sasan	1240 (E02, Tue)	Guo, Jianping	1999 (I07, Mon)
Gonçalves, Haroldo	1082 (C01, Tue)	Greaney, P.	258 (A03, Sun)	Guo, Jingchun	925 (B07, Wed)
Gond, Ritambhara	2307 (L05, Mon)	Greaney, P.	193 (A02, Tue)	Guo, Junsong	2222 (L02, Thu)
Gong, Qing	1718 (I04, Sun)	Greber, Thomas	816 (B05, Thu)	Guo, Lili	1657 (I03, Mon)
Gong, Shaoqin	1563 (H04, Wed)	Greeley, Jeffrey	358 (A03, Mon)	Guo, Qian	2216 (L02, Wed)
Gong, Shuiping	1718 (I04, Sun)	Green, Bruce	1404 (H01, Mon)	Guo, Wei	98 (A01, Mon)
Gong, Xun	731 (B03, Wed), 2273 (L04, Mon)	Greenbaum, Steve	569 (A03, Thu)	Guo, Wenxi	1511 (H03, Tue)
Gonzales, Ivana	2241 (L03, Wed), 2243 (L03, Wed), 2540 (Z01, Tue)	Greenbaum, Steven	106 (A01, Mon), 498 (A03, Wed), 2521 (Z01, Tue)	Guo, Zhanhu	516 (A03, Wed)
Gonzalez, Luisalberto	2032 (K01, Mon), 2077 (K03, Wed)	Greenblatt, Martha	1903 (I05, Thu)	Guo, Zhansheng	430 (A03, Tue), 603 (A03, Thu), 1965 (I06, Tue)
Gonzalez, Matthew	1236 (E02, Tue)	Greene, Winfield	1693 (I03, Wed)	Gupta, Amit	737 (B03, Thu)
González, Teresa	985 (B08, Mon)	Greenlee, Lauren	1681 (I03, Tue), 2002 (I07, Mon), 2013 (I07, Tue)	Gupta, Arushi	586 (A03, Thu)
González Delgado, José Antonio	798 (B05, Wed)	Greenman, John	2255 (L03, Thu), 2260 (L03, Thu), 2262 (L03, Thu), 2264 (L03, Thu), 2266 (L03, Thu)	Gupta, Prashant	65 (A01, Mon), 1688 (I03, Wed)
Gonzalez Dominguez, Jose Miguel	768 (B04, Mon)	Greenwood, David	2413 (M01, Tue)	Gupta, Raju Kumar	160 (A01, Wed)
González García, María Begoña	2119 (L01, Tue), 2456 (M01, Wed)			Gupta, Ram B.	2094 (K03, Thu)
Gonzalez Rodriguez, Romeo	1788 (I04, Wed)			Gupta, Richa	2487 (M02, Mon)
				Gupta, Shiva	1695 (I03, Wed), 2004 (I07, Mon)
				Gupta, Vipul	1108 (C02, Mon)
				Gutiérrez Tinoco, Oliver	1634 (I02, Thu), 1822 (I05, Sun)
				Gutsch, Sebastian	1158 (D01, Tue)
				Gutsche, Philipp	1164 (D01, Wed)

Author Index

Author	Abs No.
Guy-Bouyssou, Delphine	4 (A01, Sun), 133 (A01, Tue)
Guyomard, Dominique	4 (A01, Sun), 473 (A03, Wed), 585 (A03, Thu)
Guzelturk, Burak	1152 (D01, Mon)
Guzman, Katarina	2580 (Z01, Tue)
Gyenge, Elod	1771 (I04, Tue), 1792 (I04, Wed), 1829 (I05, Sun)

H

Ha, Heung Yong	1303 (F01, Tue)
Ha, Jeong Sook	82 (A01, Mon)
Ha, Jungmin	1168 (D01, Wed)
Ha, Phuc	2256 (L03, Thu)
Ha, Su	2246 (L03, Wed), 2647 (Z03, Wed)
Ha, Tae-Jun	764 (B04, Mon), 1562 (H04, Tue)
Haag, Jacob	435 (A03, Tue)
Haarberg, Geir	1315 (F01, Wed)
Habib-Zadeh, Faezeh	1848 (I05, Mon)
Habisreutinger, Severin	643 (B01, Mon)
Hackett, Gregory	1791 (I04, Wed), 1941 (I06, Mon), 2320 (L05, Tue), 2361 (L05, Thu), 2363 (L05, Thu)
Hadad, Caroline	768 (B04, Mon)
Haddow, Tyllyn	1962 (I06, Tue)
Hadi, Faisal	2476 (M02, Mon)
Hadzifejzovi, Emina	1907 (I05, Thu)
Haesevoets, Karel	1264 (E02, Wed)
Haesevoets, Karel	1251 (E02, Wed)
Haga, Ida Johanne	181 (A02, Tue)
Hagemann, Annika	678 (B02, Mon)
Hagen, Anke	1280 (F01, Mon)
Haghiri-Gosnet, Anne-Marie	2466 (M01, Thu)
Haghmoradi, Navid	2300 (L05, Mon), 2350 (L05, Wed)
Hagiwara, Kei	1470 (H02, Tue)
Hahn, Christopher	1612 (I02, Wed), 1615 (I02, Wed), 1631 (I02, Thu), 1832 (I05, Sun)
Hahn, Nathan	262 (A03, Sun), 263 (A03, Sun)
Haigh, Thomas	1371 (G01, Mon)
Hakola, Liisa	1789 (I04, Wed)
Halalay, Ion	309 (A03, Mon)
Halck, Niels	2287 (L04, Tue)
Hall, Alex	319 (A03, Mon), 1330 (F02, Tue)
Hall, Derek	1066 (C01, Tue)
Hall, Timothy	1127 (C02, Tue), 1134 (C02, Tue), 1286 (F01, Tue), 1316 (F01, Wed), 1321 (F01, Wed), 1322 (F01, Wed), 2149 (L01, Wed), 2357 (L05, Thu)
Hallez, Loic	1297 (F01, Tue)
Halli, Petteri	1292 (F01, Tue)
Hallinan, Daniel	2629 (Z02, Wed)
Halloran, Kevin	2490 (M02, Tue)
Halpern, Jeffrey	2139 (L01, Wed)
Halsall, Matthew	1159 (D01, Tue)
Ham, Hyung Chul	1812 (I04, Wed)
Ham, Hyung Chul	1804 (I04, Wed)
Ham, Kahyun	2351 (L05, Wed), 2382 (L06, Mon)
Ham, YuSeok	1627 (I02, Thu)
Hamann, Kathryn	2059 (K03, Tue), 2633 (Z02, Wed)
Hamann, Thomas	1848 (I05, Mon), 2019 (I07, Tue)
Hamdan, Monjid	202 (A02, Tue)
Hammers, Robert	2 (A01, Sun), 573 (A03, Thu)
Hammer, Meredith	1038 (B09, Tue)
Hammerschmidt, Martin	1164 (D01, Wed)
Hamon, Jonathan	585 (A03, Thu)
Han, Binghong	67 (A01, Mon), 80 (A01, Mon), 260 (A03, Sun), 291 (A03, Mon), 1935 (I06, Mon)
Han, Byungchan	1716 (I03, Thu)
Han, Chan Su	68 (A01, Mon), 69 (A01, Mon), 70 (A01, Mon)
Han, Chi-Hwan	920 (B07, Tue)

Author	Abs No.
Han, Chul Hee	1518 (H03, Wed)
Han, Donghoon	2126 (L01, Tue)
Han, Feng	1597 (I02, Wed)
Han, Hoesong	779 (B04, Tue), 903 (B07, Tue)
Han, Hyungkyu	2400 (L06, Tue)
Han, Jaebeom	178 (A01, Thu)
Han, Jinhyup	30 (A01, Mon), 2145 (L01, Wed)
Han, Jong Hee	1759 (I04, Tue), 1785 (I04, Wed)
Han, Jung	1563 (H04, Wed)
Han, Jung-Gu	501 (A03, Wed)
Han, Kee	301 (A03, Mon)
Han, Kee Sung	298 (A03, Mon), 299 (A03, Mon)
Han, S. I.	601 (A03, Thu)
Han, Sang Soo	1910 (I05, Thu)
Han, Seung Won	636 (B01, Sun)
Han, Seungwu	864 (B06, Tue), 1654 (I03, Mon)
Han, Song I.	2576 (Z01, Tue), 2577 (Z01, Tue)
Han, Tao	1183 (D02, Mon)
Han, Yunyu	1240 (E02, Tue)
Hanana, Manel	932 (B07, Wed)
Hanasoge, Srinivas	2472 (M01, Thu)
Hanchett, Marry	2111 (L01, Mon)
Hand, Steven	109 (A01, Mon)
Handl, Michael	1769 (I04, Tue)
Hangarter, Carlos	1230 (E02, Mon), 1308 (F01, Tue)
Hankinson, John	629 (B01, Sun), 2017 (I07, Tue)
Hanna, James	151 (A01, Wed)
Hannula, Pyry	1292 (F01, Tue)
Hanrath, Tobias	1604 (I02, Wed)
Hänsel, Michael	1119 (C02, Tue)
Hansen, Heine	1607 (I02, Wed), 1677 (I03, Tue), 2287 (L04, Tue)
Hansen, Kent	1661 (I03, Mon)
Hansen, Ole	1912 (I05, Thu)
Hanykova, Lenka	1011 (B08, Tue)
Hao, Feng	398 (A03, Tue)
Hao, Qingli	919 (B07, Tue), 2434 (M01, Wed)
Hao, Yong	436 (A03, Tue)
Haon, Cédric	467 (A03, Wed)
Happe, Thomas	2250 (L03, Wed)
Haque, Inam	2035 (K01, Mon)
Hara, Masanori	1664 (I03, Tue)
Harada, Toshihiko	2475 (M02, Mon)
Haran, Bala	1183 (D02, Mon), 1262 (E02, Wed)
Harashima, Aya	1111 (C02, Mon)
Harb, John	1319 (F01, Wed)
Harder, Bryan	1128 (C02, Tue)
Hardin, William	1675 (I03, Tue)
Hardwick, Laurence	2182 (L02, Tue)
Hardy, Emilee	272 (A03, Sun)
Hari Mohan, E.	320 (A03, Mon)
Hariharan, Subrahmaniam	1296 (F01, Tue)
Härk, Eneli	652 (B01, Tue), 1723 (I04, Sun), 2308 (L05, Mon)
Härmas, Riinu	652 (B01, Tue)
Harnden, Ross	1986 (I06, Wed)
Harniman, Robert	1225 (E02, Mon)
Harpak, Nimrod	561 (A03, Wed)
Harrington, David	2118 (L01, Tue), 2203 (L02, Wed), 2224 (L02, Thu), 2489 (M02, Tue), 2543 (Z01, Tue), 2557 (Z01, Tue), 2609 (Z01, Tue), 2611 (Z01, Tue)
Harrington, George	1944 (I06, Mon), 2359 (L05, Thu), 2591 (Z01, Tue)
Harris, John	1978 (I06, Tue)
Harris, Stephen	128 (A01, Tue)
Harrison, George	1858 (I05, Tue)
Harrison, Katharine	2389 (L06, Tue)
Hart, Alister	1042 (C01, Mon)
Hart, Stephanie	646 (B01, Mon)
Hartmann, Gregory	1185 (D02, Mon)
Hartmann, Nicolai	726 (B03, Wed), 727 (B03, Wed)
Hartmann, Nicolai	872 (B06, Wed)

Author	Abs No.
Harton, Shane	2570 (Z01, Tue)
Harutyunyan, Avetik	624 (B01, Sun)
Harvey, Jackson	674 (B02, Mon), 746 (B03, Thu)
Harzer, Gregor	1721 (I04, Sun)
Hasan, Dihan	1529 (H03, Wed)
Hasan, Maksudul	1907 (I05, Thu)
Hasan, Md Tanvir	681 (B02, Mon), 693 (B02, Tue), 694 (B02, Tue)
Hasan, Mohammad	1175 (D02, Mon)
Hasan, Mohammad Morshed Moshir	1988 (I06, Wed)
Hase, Yoko	584 (A03, Thu)
Hasegawa, Hiroyuki	954 (B07, Thu)
Hasegawa, Ryo	1096 (C01, Wed)
Hasegawa, Shinya	484 (A03, Wed)
Haseyama, Takumi	2283 (L04, Mon)
Hashimoto, Kazuhito	2228 (L02, Thu)
Hashimoto, Yasushi	2046 (K01, Tue)
Hashinokuchi, Michihiro	511 (A03, Wed)
Hasobe, Taku	940 (B07, Wed)
Hatcher, Jasmine	2521 (Z01, Tue)
Hatton, T.	1296 (F01, Tue)
Hauch, Anne	1280 (F01, Mon)
Hausseiner, Sophia	1823 (I05, Sun), 1856 (I05, Tue)
Hautier, Geoffroy	1782 (I04, Wed)
Havens, Mallory	2574 (Z01, Tue)
Haverkamp, Richard	1780 (I04, Wed)
Hawes, Gillian	2392 (L06, Tue)
Hawk, Jeffrey	1107 (C02, Mon)
Hawkins, Brian	1308 (F01, Tue)
Hawkins, Casey	329 (A03, Mon)
Hawks, Steven	1284 (F01, Tue), 2385 (L06, Tue)
Hawthorne, Krista	259 (A03, Sun), 260 (A03, Sun)
Hawtof, Ryan	2014 (I07, Tue)
Hayakawa, Akinobu	914 (B07, Tue)
Hayase, Masanori	1255 (E02, Wed), 1257 (E02, Wed), 1775 (I04, Wed)
Hayashi, Akari	1685 (I03, Wed)
Hayashi, Narumi	2514 (Z01, Tue)
Hayashi, Ryutarou	2071 (K03, Wed)
Hayashi, Takashi	1012 (B08, Tue)
Hayes, Michael	1188 (D02, Mon)
Haynes, Daniel	2419 (M01, Tue)
He, Cheng	1672 (I03, Tue), 1766 (I04, Tue), 2358 (L05, Thu)
He, Cheng	1786 (I04, Wed)
He, Jr-Hau	1547 (H04, Tue)
He, Meinan	570 (A03, Thu)
He, Pan	56 (A01, Mon)
He, Ping	1744 (I04, Mon)
He, Qi-Yang	1193 (D02, Mon)
He, Qianran	43 (A01, Mon), 424 (A03, Tue)
He, Ting	1496 (H03, Tue), 1596 (I02, Wed)
He, Xiaowei	719 (B03, Wed), 723 (B03, Wed), 724 (B03, Wed), 727 (B03, Wed), 729 (B03, Wed)
He, Xin	384 (A03, Tue)
He, Yanghua	74 (A01, Mon)
Head, Ian	2247 (L03, Wed)
Heath, Caleb	2399 (L06, Tue)
Hegde, Vinay	442 (A03, Wed)
Heinemeyer, Thea	211 (A02, Tue)
Heinzel, Angelika	211 (A02, Tue)
Heiskanen, Satu	496 (A03, Wed)
Heitjans, Paul	2296 (L04, Tue)
Heller, Daniel	674 (B02, Mon), 685 (B02, Mon), 746 (B03, Thu)
Hellstern, Thomas	1808 (I04, Wed)
Henckel, Danielle	1862 (I05, Tue)
Hendrickson, Christopher	806 (B05, Wed)
Henig, Joerg	2250 (L03, Wed)
Henriques, Alexandra	162 (A01, Wed)
Henriques, David	1138 (C02, Wed)
Henton, Daniel	224 (A02, Wed)
Heo, Su Jeong	1599 (I02, Wed)
Her, Bob	2566 (Z01, Tue), 2569 (Z01, Tue)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Her, Jim	2637 (Z03, Wed)	Hobart, Karl	1409 (H01, Mon), 1410 (H01, Mon), 1420 (H01, Tue)	Horoszko, Christopher	674 (B02, Mon), 746 (B03, Thu)
Hereijgers, Jonas	1274 (F01, Mon), 1298 (F01, Tue)	Hobbs, Christopher	1382 (G01, Tue)	Horsley, Kimberly	1855 (I05, Tue), 1884 (I05, Wed), 1929 (I05, Thu)
Herlin, Nathalie	467 (A03, Wed)	Hodgson, Andrew	985 (B08, Mon)	Hos, Tomy	1598 (I02, Wed)
Hermosilla, Patricio	2187 (L02, Tue)	Hodson, Thomas	138 (A01, Tue)	Hoshi, Yoshinao	1050 (C01, Mon), 1085 (C01, Tue), 1094 (C01, Wed)
Hernandez, Alexandre	509 (A03, Wed)	Hoe, Hui Huang	2076 (K03, Wed)	Hoshii, Takuya	1411 (H01, Mon), 1422 (H01, Tue), 1440 (H01, Wed)
Hernandez, Tyler	1260 (E02, Wed)	Hoehne, Theresa	1164 (D01, Wed)	Hosseini, Seyyedamirhossein	2045 (K01, Tue)
Hernández Santos, David	2119 (L01, Tue), 2456 (M01, Wed)	Hof, Ferdinand	854 (B06, Tue)	Hosseini, Soraya	20 (A01, Sun)
Herrera, Francisco	2003 (I07, Mon)	Hofferber, Eric	682 (B02, Mon)	Hosseinzadeh, Hamed	167 (A01, Thu)
Herrero, Enrique	2330 (L05, Wed)	Hoffmann, Peter	2495 (M02, Tue)	Hou, Junxian	2247 (L03, Wed)
Herring, Andrew	1749 (I04, Mon)	Hofmann, James	2526 (Z01, Tue)	Hou, Nianjun	1966 (I06, Tue)
Herritsch, Alfred	1715 (I03, Thu)	Hofmann, Jonas	2292 (L04, Tue)	Hou, Ping-Jen	1972 (I06, Tue)
Herrmann, Niklas	678 (B02, Mon)	Hofmann, Stephan	841 (B06, Tue)	Hou, Runfang	2578 (Z01, Tue)
Herron, Jeff	2164 (L02, Mon)	Högele, Alexander	728 (B03, Wed)	Hou, Xiaofan	1620 (I02, Wed)
Hersam, Mark	442 (A03, Wed), 706 (B03, Tue), 849 (B06, Tue), 1552 (H04, Tue)	Hogg, Thomas	1612 (I02, Wed)	Hou, Xu Xian	169 (A01, Thu)
Herskowitz, Moti	1598 (I02, Wed)	Hohenadel, Amelia	1801 (I04, Wed)	Hou, Xueyan	823 (B05, Thu)
Hertel, Tobias	700 (B03, Thu), 748 (B03, Tue)	Hohman, Benjamin	1717 (I04, Sun)	Houk, K.	811 (B05, Wed)
Hesari, Mahdi	2128 (L01, Tue)	Höhn, Sarah	1041 (C01, Mon)	Howell, Pauline	2099 (L01, Mon)
Hesketh, Peter	2472 (M01, Thu)	Holcomb, Gordon	1105 (C02, Mon), 1106 (C02, Mon)	Howes, John	615 (A04, Mon)
Heskett, David	555 (A03, Wed)	Holdcroft, Steven	1583 (I01, Wed), 1801 (I04, Wed), 1909 (I05, Thu)	Hozomi, Eiji	194 (A02, Tue)
Hetrick, Wesley	2451 (M01, Wed)	Holden, Konner	1187 (D02, Mon)	Hsiang, Chen-Chih	1446 (H01, Wed)
Hettinger, Jeffrey	156 (A01, Wed)	Holden, William	2122 (L01, Tue)	Hsiang, Yu-Jen	2509 (M02, Tue)
Heustess, Mary	1038 (B09, Tue)	Holesinger, Terry	2598 (Z01, Tue)	Hsieh, Cheng-Yu	1314 (F01, Wed)
Hewson, John	273 (A03, Sun), 369 (A03, Mon)	Holladay, Jamelyn	1648 (I03, Mon), 1822 (I05, Sun)	Hsieh, Ching-Yen	1483 (H03, Mon), 1515 (H03, Tue)
Heythem, Salhi	1472 (H02, Tue)	Holland-Cunz, Matthäa	222 (A02, Wed), 2274 (L04, Mon)	Hsin, Yue-Ming	1431 (H01, Tue), 1432 (H01, Tue)
Hibino, Junichi	481 (A03, Wed)	Hollas, Aaron	216 (A02, Wed), 239 (A02, Thu), 241 (A02, Thu), 243 (A02, Thu)	Hsu, An-Hsuan	2614 (Z02, Wed)
Hibino, Yusuke	837 (B06, Tue)	Hollerman, William	2643 (Z03, Wed)	Hsu, Chen-Pin	1487 (H03, Mon)
Hickey, David	2088 (K03, Thu), 2240 (L03, Wed), 2241 (L03, Wed)	Holm, Thomas	2224 (L02, Thu), 2489 (M02, Tue), 2543 (Z01, Tue), 2557 (Z01, Tue)	Hsu, Chia-Liang	1527 (H03, Wed)
Hickner, Michael	2110 (L01, Mon), 2234 (L02, Thu)	Holm, Thomas	2609 (Z01, Tue)	Hsu, Han-Fu	1394 (G01, Tue)
Hicks, Jason	2003 (I07, Mon)	Holmberg, Sunshine	666 (B02, Sun), 1033 (B09, Sun)	Hsu, Jui-Hung	149 (A01, Wed)
Hiesgen, Renate	1769 (I04, Tue)	Holmberg, Vincent	249 (A03, Sun), 396 (A03, Tue)	Hsu, Kuo-Min	1103 (C01, Wed)
Higai, Shinichi	1329 (F02, Tue)	Holmes, Michael	928 (B07, Wed)	Hsu, Shin-Ru	1249 (E02, Tue)
Higashi, Yasuhiro	1052 (C01, Mon)	Holmes, Stuart	1763 (I04, Tue), 1788 (I04, Wed)	Hsu, Ting-Heng	182 (A02, Tue), 1576 (H04, Wed)
Higashiwaki, Masataka	1417 (H01, Tue)	Holmes, Stuart	1764 (I04, Tue)	Hsu, Wei-En	1489 (H03, Mon)
Higgins, Drew	1612 (I02, Wed), 1720 (I04, Sun)	Holt, Judson	1368 (G01, Mon)	Hsu, Yung	1549 (H04, Tue)
Higgins, Simon	985 (B08, Mon), 2275 (L04, Mon)	Holubowitch, Nicolas	2354 (L05, Thu)	Htoon, Han	719 (B03, Wed), 723 (B03, Wed), 724 (B03, Wed), 727 (B03, Wed), 729 (B03, Wed)
Higuchi, Eiji	2223 (L02, Thu)	Hölzel, Helen	975 (B08, Sun)	Hu, Bin	230 (A02, Wed), 461 (A03, Wed), 472 (A03, Wed)
Higurashi, Eiji	1470 (H02, Tue)	Homma, Takayuki	1237 (E02, Tue), 1241 (E02, Tue)	Hu, Bo	203 (A02, Tue), 220 (A02, Wed)
Hihara, Lloyd	1057 (C01, Tue)	Honda, Kazuyoshi	481 (A03, Wed)	Hu, Boxun	1121 (C02, Tue), 1599 (I02, Wed)
Hihn, Jean-Yves	1261 (E02, Wed), 1263 (E02, Wed), 1297 (F01, Tue)	Honda, Yuki	1470 (H02, Tue)	Hu, Chi-Chang	1267 (E02, Wed)
Hilger, André	477 (A03, Wed), 652 (B01, Tue)	Hong, Bo Ki	1776 (I04, Wed)	Hu, Enyuan	312 (A03, Mon)
Hill, Caleb	2129 (L01, Tue)	Hong, Byung Hee	1654 (I03, Mon)	Hu, Guantai	88 (A01, Mon)
Hill, Jonathan	1011 (B08, Tue)	Hong, Hyeonang	2058 (K03, Tue)	Hu, Guilin	16 (A01, Sun)
Hill, Madison	2545 (Z01, Tue)	Hong, Jessica	509 (A03, Wed), 519 (A03, Wed)	Hu, Jiayun	2500 (M02, Tue)
Hiller, Daniel	1158 (D01, Tue)	Hong, Jindui	421 (A03, Tue)	Hu, Jiazhi	1953 (I06, Tue)
Hillestad, Magne	181 (A02, Tue)	Hong, Jong-Eun	1117 (C02, Mon)	Hu, Jue	1707 (I03, Thu), 2232 (L02, Thu)
Hinds, Bruce	739 (B03, Thu), 2060 (K03, Tue)	Hong, Junsung	1599 (I02, Wed)	Hu, Keda	1751 (I04, Mon)
Hintennach, Andreas	278 (A03, Sun)	Hong, Kootak	864 (B06, Tue)	Hu, Leiming	1776 (I04, Wed)
Hipps, K. W.	989 (B08, Mon)	Hong, Seok Won	2379 (L06, Mon)	Hu, Min-Da	1193 (D02, Mon)
Hirai, Nobumitsu	668 (B02, Sun), 2027 (K01, Mon)	Hong, Sujik	2217 (L02, Wed)	Hu, Victor	596 (A03, Thu)
Hiramoto, Toshiro	1378 (G01, Tue), 1470 (H02, Tue)	Hong, Suk-Gi	428 (A03, Tue)	HU, Xijun	305 (A03, Mon)
Hirano, Shoko	1724 (I04, Sun), 2587 (Z01, Tue)	Hong, Sungjun	920 (B07, Tue)	Hu, Yang	2613 (Z01, Tue)
Hirano-Iwata, Ayumi	2283 (L04, Mon)	Hong, Wesley	2103 (L01, Mon)	Hu, Yi	910 (B07, Tue)
Hirata, Gustavo	1168 (D01, Wed)	Hong, Young Taik	2636 (Z02, Wed)	Hu, Youfan	1505 (H03, Tue)
Hirata, Takayuki	2029 (K01, Mon)	Hong, Zhong-Jie	2137 (L01, Wed), 2459 (M01, Wed)	Hua, Hang	1313 (F01, Wed)
Hirose, Fumihiko	2283 (L04, Mon)	Hongbin, Yang	1903 (I05, Thu)	Huang, Andy	2650 (Z03, Wed)
Hirose, Fumihiko	2625 (Z02, Wed)	Hönicke, Philipp	900 (B06, Thu)	Huang, Binbin	2216 (L02, Wed)
Hirota, Shun	1018 (B08, Tue)	Honkimäki, Veijo	1797 (I04, Wed), 1817 (I04, Thu)	Huang, Bolong	2232 (L02, Thu)
Hirsch, Andreas	787 (B05, Tue)	Honma, Saika	2027 (K01, Mon)	Huang, Chih-Yang	1448 (H01, Wed)
Hirsh, Hayley	594 (A03, Thu)	Hooper-Burkhardt, Lena	242 (A02, Thu)	Huang, Chun Yuan	1081 (C01, Tue), 1813 (I04, Wed)
Hisaeda, Yoshio	2050 (K01, Tue)	Hood, Zachary	451 (A03, Wed)	Huang, Chun-Wei	1314 (F01, Wed), 1433 (H01, Tue)
Hisatomi, Takashi	1891 (I05, Wed), 1913 (I05, Thu)	Hori, Haruna	935 (B07, Wed)	Huang, Hsin-Chih	2336 (L05, Wed)
Hite, Jennifer	1407 (H01, Mon), 1410 (H01, Mon)	Horie, Yuki	1810 (I04, Wed)	Huang, Hsin-Hui	1664 (I03, Tue)
Hjelm, Rex	1991 (I06, Wed)	Horikawa, Shin	2445 (M01, Wed), 2446 (M01, Wed)	Huang, Hui-Chin	1398 (G01, Tue), 1399 (G01, Tue)
Hladky, Michael	434 (A03, Tue)			Huang, Hui-Chun	1029 (B09, Sun)
Ho, Ghim Wei	1551 (H04, Tue)				
Ho, Johnny	1553 (H04, Tue)				
Hoang, Annie	2172 (L02, Mon)				

Author Index

Author	Abs No.
Huang, Jilin	640 (B01, Sun)
Huang, Jinchao	115 (A01, Mon), 140 (A01, Tue), 2572 (Z01, Tue)
Huang, Jing-Yong	1193 (D02, Mon)
Huang, Jinhua	239 (A02, Thu)
Huang, Jinhua	230 (A02, Wed)
Huang, Jun	2304 (L05, Mon)
Huang, Kai	854 (B06, Tue)
Huang, Kan	2360 (L05, Thu)
Huang, Kevin	19 (A01, Sun)
Huang, Li Wei	2137 (L01, Wed)
Huang, Li-Wei	2459 (M01, Wed)
Huang, Liuying	495 (A03, Wed), 1718 (I04, Sun)
Huang, Qian	26 (A01, Mon), 1902 (I05, Thu)
Huang, Ting-Kai	1314 (F01, Wed)
Huang, Tung-Shi	2445 (M01, Wed), 2446 (M01, Wed)
Huang, Wenxin	650 (B01, Mon)
Huang, Xian	1575 (H04, Wed)
Huang, Yao-Liang	1395 (G01, Tue)
Huang, Yen-Hsiang	2508 (M02, Tue)
Huang, Yu-Wei	1434 (H01, Tue)
Huang, Yunhui	518 (A03, Wed)
Hubble, Dion	513 (A03, Wed), 1579 (H04, Wed)
Huber, Andreas	872 (B06, Wed)
Hubert, McKenzie	1808 (I04, Wed)
Hubin, Annick	1207 (E01, Wed)
Hudiono, Yeny	2570 (Z01, Tue)
Hui, Kwun Nam	143 (A01, Wed)
Huliganga, Elizabeth	692 (B02, Tue)
Hull, Matt	57 (A01, Mon)
Hull, Robert	1095 (C01, Wed)
Hull, Troy	1198 (E01, Tue)
Huot, Jean-Yves	476 (A03, Wed)
Hur, Seung Young	1072 (C01, Tue)
Hurley, Michael	1097 (C01, Wed)
Hurley, Paul	1464 (H02, Mon)
Hussain, Muhammad	1574 (H04, Wed)
Hussain, Sajjad	1302 (F01, Tue)
Hussaini, Syed	2062 (K03, Wed)
Huyghebaert, Cedric	842 (B06, Tue), 846 (B06, Tue)
Huynh, Le	2654 (Z03, Wed)
Hwang, Bing-Joe	2461 (M01, Thu)
Hwang, C	2524 (Z01, Tue), 2560 (Z01, Tue)
Hwang, Cheol Seong	2561 (Z01, Tue)
Hwang, Gyeong	772 (B04, Tue), 1185 (D02, Mon)
Hwang, Hae Jin	503 (A03, Wed)
Hwang, Ho Jung	593 (A03, Thu), 1961 (I06, Tue)
Hwang, Hongsun	2217 (L02, Wed)
Hwang, Ihn	2562 (Z01, Tue), 2593 (Z01, Tue)
Hwang, Jang-Yeon	303 (A03, Mon), 540 (A03, Wed), 543 (A03, Wed)
Hwang, Jee Youn	2547 (Z01, Tue)
Hwang, Jin-Ha	504 (A03, Wed)
Hwang, Jonathan	2103 (L01, Mon), 2287 (L04, Tue)
Hwang, Junesun	560 (A03, Wed)
Hwang, Jungyeon	779 (B04, Tue)
Hwang, Seong-Ju	2058 (K03, Tue)
Hwang, Shinjae	1903 (I05, Thu)
Hwang, Soo Min	111 (A01, Mon), 1285 (F01, Tue), 2145 (L01, Wed)
Hwang, Yun Jeong	1655 (I03, Mon), 1826 (I05, Sun), 1827 (I05, Sun), 1853 (I05, Mon)
Hwu, Alexander	666 (B02, Sun)
Hwu, Jenn-Gwo	1374 (G01, Mon), 1459 (H02, Mon), 2464 (M01, Thu)

I

Iadecola, Antonella	602 (A03, Thu)
Iannucci, Leonardo	1048 (C01, Mon)
Iddir, Hakim	67 (A01, Mon), 291 (A03, Mon), 358 (A03, Mon)
Idriss, Hicham	1858 (I05, Tue)

Author	Abs No.
Ieropoulos, Ioannis	2255 (L03, Thu), 2260 (L03, Thu), 2262 (L03, Thu), 2264 (L03, Thu), 2266 (L03, Thu)
Ignatova, Tetyana	245 (A03, Sun)
Iguchi, Yoshinori	1470 (H02, Tue)
Ihly, Rachele	646 (B01, Mon)
Ihly, Rachele	751 (B03, Thu)
Ihrfors, Charlotte	1205 (E01, Wed)
Iijima, Sumio	701 (B03, Tue)
Iiyama, Akihiro	2305 (L05, Mon)
Iiyama, Akihiro	2210 (L02, Wed)
Ikeda, Katsuyoshi	2116 (L01, Tue)
Ikeda, Nobukazu	2416 (M01, Tue)
Ikegai, Hajime	668 (B02, Sun)
Ikuma, Naohiko	941 (B07, Wed)
Ikuta, Ryo	1255 (E02, Wed)
Ilhwan, Oh	1896 (I05, Wed), 2280 (L04, Mon)
Ilott, Andrew	131 (A01, Tue)
Ilyukhina, Liudmila	1780 (I04, Wed)
Im, Jinsol	544 (A03, Wed)
Im, Kwang Serb	2577 (Z01, Tue)
Im, Mintaek	1837 (I05, Sun)
Im, Seongil	2623 (Z02, Wed)
Im, Seongil	866 (B06, Wed), 881 (B06, Wed), 887 (B06, Wed), 901 (B06, Tue), 953 (B07, Thu), 2624 (Z02, Wed)
Imada, Yasushi	2062 (K03, Wed)
Imahori, Hiroshi	819 (B05, Thu), 1852 (I05, Mon)
Imai, Hideto	1809 (I04, Wed), 1810 (I04, Wed), 2210 (L02, Wed)
Imai, Takahiro	2625 (Z02, Wed)
Imamura, Kanako	2020 (I07, Tue)
Imamura, Keigo	1003 (B08, Tue)
Imanishi, Akihito	923 (B07, Wed)
Imponenti, Luca	1963 (I06, Tue)
Inaba, Minoru	511 (A03, Wed)
Inaba, Tomohiro	1401 (H01, Mon)
Inagi, Shinsuke	2025 (K01, Mon), 2028 (K01, Mon)
Ince, Utku	1818 (I04, Thu)
Ingdal, Mats	2489 (M02, Tue)
Ingersoll, Nolan	445 (A03, Wed)
Ingram, Brian	262 (A03, Sun)
Ingram, David	1156 (D01, Tue)
Inman, Maria	1127 (C02, Tue), 1134 (C02, Tue), 1316 (F01, Wed)
Inoue, Hiroshi	2223 (L02, Thu)
Inoue, Katsuya	435 (A03, Tue)
Inoue, Taiki	702 (B03, Tue)
Inoue, Taisei	435 (A03, Tue)
Instan, Alvaro	71 (A01, Mon), 2653 (Z03, Wed)
Intan, Nadia	357 (A03, Mon)
Intikhab, Saad	1358 (F02, Thu)
Inukai, Junji	2210 (L02, Wed), 2305 (L05, Mon)
Ion-Ebrasu, Daniela	639 (B01, Sun)
Irshad, Ahamed	1691 (I03, Wed)
Irvine, John	1661 (I03, Mon)
Isaacs-smith, Tamara	1441 (H01, Wed)
Isella, Giovanni	1173 (D01, Wed)
Isern, Helena	1817 (I04, Thu)
Isgor, O. Burkan	1068 (C01, Tue), 1099 (C01, Wed), 1100 (C01, Wed)
Ishibashi, Kiyotaka	1185 (D02, Mon)
Ishida, Takuya	931 (B07, Wed)
Ishihara, Seiya	837 (B06, Tue)
Ishihara, Shinsuke	1011 (B08, Tue)
Ishii, Akihiro	721 (B03, Wed)
Ishii, Hidekazu	2416 (M01, Tue)
Ishii, Kazuyuki	992 (B08, Mon)
Ishii, Seika	2043 (K01, Tue)
Ishimori, Koichiro	1015 (B08, Tue)
Ishitani, Osamu	1878 (I05, Wed)
Isimjan, Tayirjan Taylor	1928 (I05, Thu)
Islam, Mohammad	628 (B01, Sun), 672 (B02, Mon)

Author	Abs No.
Islam, Monsur	1031 (B09, Sun), 1034 (B09, Sun), 1035 (B09, Sun), 1038 (B09, Tue), 1039 (B09, Tue), 1040 (B09, Tue)
Islam, Muhammad Naoshad	2387 (L06, Tue)
Islam, Shakirul	1198 (E01, Tue)
Istif, Akcan	768 (B04, Mon)
Itagaki, Kaoru	2514 (Z01, Tue)
Itagaki, Masayuki	1050 (C01, Mon), 1085 (C01, Tue), 1094 (C01, Wed)
Itagaki, Yoshiteru	1201 (E01, Tue)
Ito, Ryohei	1004 (B08, Tue)
Iurlo, Matteo	813 (B05, Wed)
Ivanov, Ilija	2629 (Z02, Wed)
Ivanova, Kristina	2079 (K03, Wed)
Ivanovskaya, Anna	192 (A02, Tue)
Ivers-Tiffée, Ellen	132 (A01, Tue)
Iverson, Nicole	682 (B02, Mon)
Iverson, Ray	89 (A01, Mon)
Ivey, Douglas	54 (A01, Mon), 1197 (E01, Tue)
Ivory, Cornelius	2096 (L01, Mon), 2496 (M02, Tue)
Iwai, Hiroshi	1411 (H01, Mon), 1422 (H01, Tue), 1440 (H01, Wed)
Iwao, Toshihiko	1185 (D02, Mon)
Iwazaki, Yoshitaka	1372 (G01, Mon)
Iyoda, Masahiko	802 (B05, Wed)
Izawa, Takumi	635 (B01, Sun)

J

Jablonska, Anna	2302 (L05, Mon)
Jackson, Dean	2476 (M02, Mon)
Jackson, Gregory	1963 (I06, Tue)
Jackson, Howard	1169 (D01, Wed)
Jackson, Matt	1139 (C02, Wed)
Jackson, Megan	2034 (K01, Mon)
Jacobsen, Karsten	1912 (I05, Thu)
Jacques, Simon	1817 (I04, Thu)
Jadwisieniczak, Wojciech	1156 (D01, Tue)
Jagadish, Chennupati	1169 (D01, Wed)
Jagannath, Badrinath	1190 (D02, Mon), 1491 (H03, Mon), 2440 (M01, Wed)
Jagannathan, Hemant	1369 (G01, Mon)
Jäger, Rutha	1723 (I04, Sun), 2308 (L05, Mon)
Jagielski, Jakub	871 (B06, Wed), 1145 (D01, Mon)
Jagota, Anand	697 (B03, Tue), 733 (B03, Wed)
Jahrman, Evan	2122 (L01, Tue)
Jaime, Salvador	1310 (F01, Wed)
Jain, Ankur	1349 (F02, Wed)
Jain, Deeksha	634 (B01, Sun)
Jaiswal, Nandini	221 (A02, Wed)
Jalem, Randy	2288 (L04, Tue)
Jalili, Rouhollah	834 (B06, Mon)
Jalili, Zohreh	170 (A01, Thu)
Jalkanen, Kirsi	257 (A03, Sun)
James, Christine	1940 (I06, Mon)
Jamil, Esaam	2300 (L05, Mon)
Jamil, Muhammad Faisal	2300 (L05, Mon)
Janáky, Csaba	1880 (I05, Wed)
Janek, Jürgen	2292 (L04, Tue)
Jang, Eun Kwang	534 (A03, Wed), 544 (A03, Wed)
Jang, Ho Won	864 (B06, Tue), 1937 (I06, Mon)
Jang, Injoon	1812 (I04, Wed)
Jang, Jin Woo	2628 (Z02, Wed)
Jang, Jong Hyun	1774 (I04, Wed), 1812 (I04, Wed)
Jang, Joonkyung	754 (B04, Mon), 757 (B04, Mon), 778 (B04, Tue)
Jang, Kyung-In	1572 (H04, Wed)
Jang, Min Su	2603 (Z01, Tue)
Jang, Myeong Je	1679 (I03, Tue), 1692 (I03, Wed), 1704 (I03, Wed)
Jang, Sei-Hum	661 (B01, Tue)
Jang, Seol	1800 (I04, Wed)
Jang, Seung Soon	238 (A02, Thu), 770 (B04, Mon), 1324 (F02, Tue), 2559 (Z01, Tue)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Jang, Soohwan	1531 (H03, Wed)	Ji, Tuo	1508 (H03, Tue)	Joo, Yong	188 (A02, Tue), 282 (A03, Sun), 351 (A03, Mon)
Jang, Taejin	1343 (F02, Wed)	Ji, Xiulei	258 (A03, Sun), 519 (A03, Wed)	Joost, Urmas	1723 (I04, Sun), 2308 (L05, Mon)
Jang, Taejin	165 (A01, Thu), 1326 (F02, Tue), 1340 (F02, Tue), 1354 (F02, Wed)	Ji, Xiulei	193 (A02, Tue), 446 (A03, Wed), 497 (A03, Wed), 509 (A03, Wed), 521 (A03, Wed), 1697 (I03, Wed)	Jordan, Robert	811 (B05, Wed)
Jang, Yun Hee	838 (B06, Tue)	Ji, Yunseong	593 (A03, Thu), 1961 (I06, Tue)	Josell, Daniel	1223 (E02, Mon), 1246 (E02, Tue), 1253 (E02, Wed), 1375 (G01, Mon), 2201 (L02, Wed)
Jang, Yunseok	1561 (H04, Tue)	Jia, Charles	161 (A01, Wed)	Joshi, Bhuwan	1521 (H03, Wed)
Janietz, Silvia	1805 (I04, Wed)	Jia, Haiping	354 (A03, Mon)	Joshi, Siddharth	27 (A01, Mon)
Janik, Michael	2000 (I07, Mon), 2013 (I07, Tue)	Jia, Hongfei	2360 (L05, Thu)	Jossen, Andreas	34 (A01, Mon), 246 (A03, Sun)
Janik, Michael	1736 (I04, Sun), 2002 (I07, Mon), 2110 (L01, Mon), 2234 (L02, Thu)	Jia, Jianyuan	852 (B06, Tue)	Jou, Jwo	1427 (H01, Tue)
Jankovic, Jasna	1816 (I04, Thu)	Jia, Qingying	1703 (I03, Wed), 1710 (I03, Thu), 2177 (L02, Tue), 2310 (L05, Tue)	Jou, Shyankay	342 (A03, Mon)
Jannasch, Patric	1750 (I04, Mon)	Jia, Qingying	1702 (I03, Wed), 2212 (L02, Wed)	Joubert, Jessica	89 (A01, Mon)
Jansen, Andrew	253 (A03, Sun), 464 (A03, Wed)	JIA, Sitong	2314 (L05, Tue)	Joulie, Marion	612 (A04, Mon)
Jaramillo, Thomas	1612 (I02, Wed), 1615 (I02, Wed), 1631 (I02, Thu), 1720 (I04, Sun), 1808 (I04, Wed), 1832 (I05, Sun), 1846 (I05, Mon), 1895 (I05, Wed), 1996 (I07, Mon), 2010 (I07, Tue), 2202 (L02, Wed), 2346 (L05, Wed)	Jia, Yibo	1061 (C01, Tue), 1062 (C01, Tue), 1070 (C01, Tue)	Jousselmé, Bruno	932 (B07, Wed)
Jaramillo-Cabanzo, Daniel	1178 (D02, Mon)	Jian, Zelang	193 (A02, Tue)	Jouvray, Alex	847 (B06, Tue)
Javey, Ali	899 (B06, Thu)	Jian, Zelang	446 (A03, Wed)	Jow, T.	290 (A03, Mon)
Jayakody, Jayakody	2521 (Z01, Tue)	Jiang, Bei	1613 (I02, Wed)	Ju, Myung Jong	758 (B04, Mon), 784 (B04, Tue)
Jayakody, Nishani	498 (A03, Wed)	Jiang, Haoran	186 (A02, Tue), 187 (A02, Tue), 276 (A03, Sun), 285 (A03, Sun)	Juang, Rucy-Shin	533 (A03, Wed)
Jayawardena, Asanka	1441 (H01, Wed)	Jiang, Heng	446 (A03, Wed), 509 (A03, Wed), 519 (A03, Wed)	Juarez-Robles, Daniel	352 (A03, Mon), 439 (A03, Tue)
Jayawardhena, Isanka Udayani	1441 (H01, Wed)	Jiang, Hongxing	1421 (H01, Tue)	Juarez-Rolon, Jose	1198 (E01, Tue)
Jayawickramarajah, Janarthanan	1007 (B08, Tue)	Jiang, Hua	1077 (C01, Tue)	Judge, William	1311 (F01, Wed)
Jayram, Naidu	867 (B06, Wed)	Jiang, Hua-Wei	985 (B08, Mon)	Juhász, Gergely	1337 (F02, Tue)
Jeanet, Adrien	722 (B03, Wed)	Jiang, Jun	36 (A01, Mon)	Jun, Seong Chan	143 (A01, Wed), 332 (A03, Mon), 405 (A03, Tue)
Jee, Joann	2094 (K03, Thu)	Jiang, Kai	537 (A03, Wed)	Jung, Ha-Young	491 (A03, Wed), 545 (A03, Wed)
Jee, Young Taek	1282 (F01, Mon)	Jiang, Kai	116 (A01, Mon), 390 (A03, Tue)	Jung, Han Hee	1572 (H04, Wed)
Jen, Alex	513 (A03, Wed), 661 (B01, Tue), 1579 (H04, Wed)	Jiang, Kai	1605 (I02, Wed), 1613 (I02, Wed), 1624 (I02, Thu), 2233 (L02, Thu)	Jung, Han Na	1572 (H04, Wed)
Jena, Prakrit	674 (B02, Mon), 685 (B02, Mon), 746 (B03, Thu)	Jiang, Kun	1093 (C01, Wed)	Jung, Ho-Young	72 (A01, Mon), 73 (A01, Mon), 101 (A01, Mon), 1649 (I03, Mon)
Jenkins, Melanie	1186 (D02, Mon), 1187 (D02, Mon)	Jiang, Lin	1093 (C01, Wed)	Jung, Hun-Gi	528 (A03, Wed), 542 (A03, Wed)
Jensen, Jens	1663 (I03, Tue)	Jiang, Lin	1707 (I03, Thu)	Jung, Hyejin	1826 (I05, Sun)
Jensen, Kim	2316 (L05, Tue)	Jiang, Liying	1371 (G01, Mon)	Jung, Hyun	906 (B07, Tue)
Jentsch, Christopher	1637 (I03, Mon)	Jiang, Sisi	461 (A03, Wed), 472 (A03, Wed)	Jung, Hyun Min	378 (A03, Tue)
Jeon, Cheolho	864 (B06, Tue), 1654 (I03, Mon)	Jiang, Xin	1393 (G01, Tue)	Jung, Hyun Suk	2101 (L01, Mon)
Jeon, Guk-Jin	1388 (G01, Tue)	Jimbo, Takehito	489 (A03, Wed)	Jung, Hyunchul	1837 (I05, Sun)
Jeon, Il	821 (B05, Thu)	Jiménez, Juan	1146 (D01, Mon)	Jung, Ji-Hyun	72 (A01, Mon), 73 (A01, Mon), 1649 (I03, Mon)
Jeon, In-Yup	653 (B01, Tue)	Jimenez-Gordon, Isabel	120 (A01, Tue)	Jung, Keeyoung	232 (A02, Wed), 234 (A02, Wed)
Jeon, Jaeho	838 (B06, Tue)	Jin, Bong-Soo	200 (A02, Tue)	Jung, Kyu-Nam	504 (A03, Wed)
Jeon, Jun-Young	764 (B04, Mon)	Jin, Bowen	1709 (I03, Thu)	Jung, Mingyu	2536 (Z01, Tue)
Jeon, Oksung	593 (A03, Thu), 1961 (I06, Tue)	Jin, Dahee	598 (A03, Thu)	Jung, Sungyup	125 (A01, Tue)
Jeon, Sumin	852 (B06, Tue)	Jin, Dahee	92 (A01, Mon)	Jung, Sunwoo	1531 (H03, Wed)
Jeon, Tae Hwa	1910 (I05, Thu), 1911 (I05, Thu)	Jin, Kyoungsuk	1682 (I03, Tue)	Jung, Sunwoo	2192 (L02, Tue)
Jeon, Youngkeun	1250 (E02, Tue)	Jin, Sang Woo	82 (A01, Mon)	Jung, Won Suk	1563 (H04, Wed)
Jeon, Yukwon	1961 (I06, Tue)	Jin, Seon-ah	1804 (I04, Wed)	Jung, Yei Hwan	1563 (H04, Wed)
Jeong, eun-Suk	1682 (I03, Tue)	Jin, Song	844 (B06, Tue), 1851 (I05, Mon)	Jung, Yeseul	70 (A01, Mon)
Jeong, Goojin	440 (A03, Tue), 449 (A03, Wed), 551 (A03, Wed)	Jin, Xinfang	19 (A01, Sun)	Jung, YounJoon	2155 (L01, Wed)
Jeong, Hwanhee	1437 (H01, Tue)	Jin, Yang	144 (A01, Wed)	Jung, Yun-Chae	2548 (Z01, Tue)
Jeong, Hye Won	1877 (I05, Wed)	Jinadasa, R. G. Waruna	910 (B07, Tue)	Junquera Pérez, Alejandro	2119 (L01, Tue)
Jeong, Jong Yeob	785 (B04, Tue)	Jing, Linda	225 (A02, Wed)	Jung, Sunhyung	455 (A03, Wed), 555 (A03, Wed), 1949 (I06, Tue)
Jeong, Kyeong-Min	366 (A03, Mon)	Jinkins, Katherine	707 (B03, Tue)	Jux, Norbert	975 (B08, Sun)
Jeong, Min-Gi	528 (A03, Wed)	Jinnouchi, Ryosuke	1581 (I01, Wed)	Juzang, Patria	2251 (L03, Wed)
Jeong, Nam-Jo	1799 (I04, Wed)	Jo, Chang Heum	330 (A03, Mon)		
Jeong, Sunho	84 (A01, Mon)	Jo, Changshin	412 (A03, Tue)	K	
Jeong, Wooseok	1376 (G01, Mon)	Jo, Hyuntak	553 (A03, Wed)	K., Guruprakash	592 (A03, Thu), 2519 (Z01, Tue)
Jeong, Yeonsu	2624 (Z02, Wed)	Jo, Jeongdai	1561 (H04, Tue)	K. H., Thulasi Raman	326 (A03, Mon), 1132 (C02, Tue)
Jeong, Yeonsu	2623 (Z02, Wed)	Jo, Nathalie	1779 (I04, Wed)	Käärik, Maike	2315 (L05, Tue)
Jeong, Yu Ra	82 (A01, Mon)	Johansonn, Patrik	602 (A03, Thu)	Kabir, M. Hasnat	2405 (M01, Tue)
Jeremiasse, Adriaan	1299 (F01, Tue)	Johnson, Billy	61 (A01, Mon)	Kabir, Sadia	2319 (I05, Tue)
Jerman, Ivan	1088 (C01, Tue)	Johnson, Christopher	466 (A03, Wed)	Kabir, Sadia	1743 (I04, Mon)
Jerschow, Alexej	131 (A01, Tue)	Johnson, Justin	738 (B03, Thu), 751 (B03, Thu)	Kabiri Ameri, Shideh	1535 (H04, Mon)
Jeun, Minhong	1490 (H03, Mon)	Johnson, Kevin	156 (A01, Wed)	Käbitz, Stefan	250 (A03, Sun)
Jewel, Yead	415 (A03, Tue)	Johnson, Tobias	2 (A01, Sun)	Kacher, Josh	856 (B06, Tue)
Jeyaranjan, Aadithya	104 (A01, Mon)	Johnston, Keith	1675 (I03, Tue)	Kadish, Karl	977 (B08, Sun)
Jeziorska-Chapman, Anna	1449 (H01, Wed)	Joi, Aniruddha	1226 (E02, Mon)	Kaenket, Surasak	535 (A03, Wed)
Jhong, Huan-Ping	2475 (M02, Mon)	Jokisaari, Jacob	360 (A03, Mon)	Kær, Søren	1665 (I03, Tue), 1814 (I04, Wed), 1815 (I04, Thu)
Ji, Chen	16 (A01, Sun)	Jones, Anne	2081 (K03, Thu)	Kaerkaes, Markus	2080 (K03, Thu)
Ji, Ho Il	1937 (I06, Mon)	Jones, Deborah	2340 (L05, Wed)	Kaiser, Martin	1820 (I05, Sun)
Ji, Liang-Wen	2509 (M02, Tue)	Jones, John	2465 (M01, Thu)	Kaji, Souki	2640 (Z03, Wed)
		Jones, John-Paul	283 (A03, Sun)	Kakihana, Masato	2644 (Z03, Wed)
		Jones, Kodey	2421 (M01, Tue)		
		Jones, Michael	2360 (L05, Thu)		
		Jones, Simon	283 (A03, Sun)		
		Joo, Taigyu	1776 (I04, Wed)		

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Kakunuri, Manohar	1027 (B09, Sun), 1032 (B09, Sun)	Karamad, Mohammadreza	1605 (I02, Wed)	Kerr, Amanda	1405 (H01, Mon)
Kakushima, Kuniyuki	1411 (H01, Mon), 1422 (H01, Tue), 1440 (H01, Wed)	Karan, Kunal	1769 (I04, Tue), 2213 (L02, Wed), 2387 (L06, Tue), 2391 (L06, Tue)	Kerr, Emily	22 (A01, Sun)
Kalaga, Kaushik	475 (A03, Wed)	Kardjilov, Nikolay	477 (A03, Wed), 652 (B01, Tue)	Kerres, Jochen	1601 (I02, Wed)
Kalam, Kristjan	1475 (H02, Tue)	Karg, Siegfried	1474 (H02, Tue)	Kersten, Bethany	1075 (C01, Tue), 2555 (Z01, Tue)
Kalangi, Vasu	1763 (I04, Tue), 1764 (I04, Tue)	Karimi, Anahita	2433 (M01, Wed)	Kesarkar, Sagar	2084 (K03, Thu)
Kalanur, Shankara	1897 (I05, Wed), 2104 (L01, Mon)	Kariuki, Nancy	1717 (I04, Sun), 1794 (I04, Wed)	Kessinger, Riley	1198 (E01, Tue)
Kalapos, Thomas	2361 (L05, Thu)	Karkar, Zouina	473 (A03, Wed)	Kessler, Mathias	2121 (L01, Tue)
Kalasila, Saran	2279 (L04, Mon)	Karsann, Devan	471 (A03, Wed)	Keum, Juyeon	1436 (H01, Tue), 1439 (H01, Wed)
Kallio, Tanja	2315 (L05, Tue)	Kartouzian, Dena	1772 (I04, Tue), 1818 (I04, Thu)	Key, Baris	67 (A01, Mon), 80 (A01, Mon), 259 (A03, Sun), 291 (A03, Mon), 350 (A03, Mon), 360 (A03, Mon)
Kalmykov, Anna	664 (B02, Sun)	Karulkar, Mohan	122 (A01, Tue)	Keyes, Michael	2395 (L06, Tue)
Kalhaus, Sergiy	9 (A01, Sun)	Kasai, Hideaki	1013 (B08, Tue)	Keyes, Tia	2075 (K03, Wed)
Kaloni, Thaneshwor	2399 (L06, Tue)	Kasatkin, Piia	2308 (L05, Mon)	Khade, Rahul	959 (B08, Sun)
Kalu, Egwu	1200 (E01, Tue), 1275 (F01, Mon), 2228 (L02, Thu)	Kasemchainan, Jitti	421 (A03, Tue)	Khakpour, Iman	433 (A03, Tue)
Kamai, Ryo	2228 (L02, Thu)	Kaskel, Stefan	337 (A03, Mon)	Khalifah, Peter	314 (A03, Mon), 377 (A03, Tue)
Kamat, Prashant	908 (B07, Tue), 1842 (I05, Mon)	Kasse, Robert	595 (A03, Thu), 599 (A03, Thu)	Khan, Faheem	2479 (M02, Mon)
Kambe, Yu	1762 (I04, Tue), 2295 (L04, Tue)	Kasse, Robert	1348 (F02, Wed)	Khan, Hafsa	2529 (Z01, Tue)
Kameyama, Tatsuya	950 (B07, Thu)	Kataoka, Hiroaki	1411 (H01, Mon)	Khan, Ieeba	2646 (Z03, Wed)
Kameyama, Tatsuya	1886 (I05, Wed)	Katayama, Yasushi	227 (A02, Wed)	Khan, Imran	771 (B04, Mon)
Kameyama, Toshiki	2450 (M01, Wed)	Katayama, Yu	578 (A03, Thu), 945 (B07, Thu), 2276 (L04, Mon)	Khan, Niazul	2485 (M02, Mon)
Kamijo, Toshio	2027 (K01, Mon)	Katiyar, Ram	71 (A01, Mon), 2653 (Z03, Wed)	Khan, Saeed	811 (B05, Wed)
Kamimura, So	2410 (M01, Tue)	Katiyar, Ram	876 (B06, Wed)	Khan, Shah	2495 (M02, Tue)
Kamineneni, Vimal	1262 (E02, Wed)	Kato, Masaru	944 (B07, Thu)	Khan, Sherjeel	1574 (H04, Wed)
Kamitaka, Yuji	1669 (I03, Tue), 2165 (L02, Mon)	Kato, Ryuichi	1708 (I03, Thu)	Khandelwal, Mudrika	1036 (B09, Sun)
Kamiya, Hidehiro	2083 (K03, Thu)	Kato, Tatsuhisa	1004 (B08, Tue)	Khanna, Rohit	1419 (H01, Tue), 1421 (H01, Tue)
Kamiya, Kazuhide	584 (A03, Thu), 2228 (L02, Thu)	Kato, Yoshitaka	1050 (C01, Mon)	Khatami, Zahra	1189 (D02, Mon)
Kamlah, Marc	1967 (I06, Tue)	Kato, Yuichiro	721 (B03, Wed)	Khatra, Narindra	1992 (I06, Wed)
Kammmler, Thorsten	1478 (H02, Tue)	Katsiev, Habib	1858 (I05, Tue)	Kheawhom, Soorathep	20 (A01, Sun), 52 (A01, Mon), 55 (A01, Mon)
Kampphaus, Ethan	277 (A03, Sun)	Kattel, Shyam	2231 (L02, Thu)	Khene, Samson	962 (B08, Sun)
Kanarbik, Rait	2308 (L05, Mon)	Kattirtzi, John	2294 (L04, Tue)	Khosla, Ajit	2403 (M01, Tue), 2452 (M01, Wed), 2460 (M01, Wed)
Kaneko, Hiroyuki	1922 (I05, Thu)	Kauffman, Douglas	1835 (I05, Sun)	Khosla, Ajit	2405 (M01, Tue), 2409 (M01, Tue), 2450 (M01, Wed), 2480 (M02, Mon), 2483 (M02, Mon)
Kanematsu, Hideyuki	668 (B02, Sun), 2027 (K01, Mon)	Kaufman, Jonas	1946 (I06, Tue)	Khoza, Thulile	1801 (I04, Wed)
Kaner, Richard	811 (B05, Wed), 2547 (Z01, Tue), 2578 (Z01, Tue)	Kaufman-Osborn, Tobin	1405 (H01, Mon)	Khudaish, Emad	771 (B04, Mon)
Kang, Byeong-Cheol	764 (B04, Mon)	Kaur, Aman	228 (A02, Wed)	Khusnutdinova, Diana	972 (B08, Sun)
Kang, Heon	2155 (L01, Wed)	Kaur, Gurpreet	1598 (I02, Wed)	Kiamco, Mia	2056 (K03, Tue)
Kang, Hyun Suk	738 (B03, Thu)	Kaushik, Vidya	1382 (G01, Tue)	Kiciński, Wojciech	2343 (L05, Wed)
Kang, Hyun Suk	646 (B01, Mon), 660 (B01, Tue)	Kavcic, Matjaz	256 (A03, Sun)	Kienitz, Brian	223 (A02, Wed)
Kang, In Ho	1436 (H01, Tue), 1439 (H01, Wed)	Kawada, Tatsuya	1930 (I06, Mon), 1957 (I06, Tue)	Kildon, Jonah	1246 (E02, Tue)
Kang, Juhyun	2568 (Z01, Tue)	Kawakami, Masaru	2409 (M01, Tue), 2450 (M01, Wed), 2480 (M02, Mon), 2483 (M02, Mon)	Kilmer, Lucas	2545 (Z01, Tue)
Kang, Kisuk	294 (A03, Mon), 580 (A03, Thu), 1682 (I03, Tue)	Kawamura, Junichi	1957 (I06, Tue)	Kim, Andrew	137 (A01, Tue), 608 (A04, Mon)
Kang, Luhao	451 (A03, Wed)	Kawamura, Tetsufumi	2414 (M01, Tue)	Kim, Ayoung	449 (A03, Wed), 551 (A03, Wed), 563 (A03, Wed)
Kang, Min-A	865 (B06, Tue)	Kawazoe, Ryoma	1257 (E02, Wed)	Kim, Beom-Sik	1837 (I05, Sun)
Kang, Mingyun	2603 (Z01, Tue)	Kayal, Himadri	1001 (B08, Tue)	Kim, Byoung Ju	553 (A03, Wed)
Kang, Myung Hoon	862 (B06, Tue)	Kayali, Enr	832 (B06, Mon)	Kim, Byoung Hoon	1682 (I03, Tue)
Kang, Naeun	1799 (I04, Wed)	Kazadojev, Igor	103 (A01, Mon)	Kim, Byung Keun	1659 (I03, Mon)
Kang, Seok Hun	625 (B01, Sun), 657 (B01, Tue)	Kazu, Suenaga	1708 (I03, Thu)	Kim, Chan-Soo	1799 (I04, Wed)
Kang, Sung	553 (A03, Wed)	Kazyak, Eric	479 (A03, Wed)	Kim, Chang Keun	662 (B01, Tue), 663 (B01, Tue)
Kang, Sung Ho	653 (B01, Tue), 981 (B08, Mon)	Keck, Devin	1031 (B09, Sun), 1035 (B09, Sun)	Kim, Chang Ki	653 (B01, Tue)
Kang, Yeonghye	366 (A03, Mon)	Kecsenovity, Egon	1880 (I05, Wed)	Kim, Chunjoong	360 (A03, Mon)
Kang, Yingbo	759 (B04, Mon), 780 (B04, Tue)	Keene, Samuel	1890 (I05, Wed)	Kim, Da Bin	69 (A01, Mon), 70 (A01, Mon)
Kanimozhi, Catherine	714 (B03, Wed)	Keilbart, Nathan	1329 (F02, Tue)	Kim, Da-Hye	491 (A03, Wed), 545 (A03, Wed)
Kannan, Balaji	1463 (H02, Mon)	Keiser, James	1116 (C02, Mon)	Kim, Dae Sik	440 (A03, Tue), 563 (A03, Wed), 564 (A03, Wed)
Kannan, Palanisamy	771 (B04, Mon)	Keleher, Jason	1074 (C01, Tue), 2261 (L03, Thu), 2526 (Z01, Tue), 2527 (Z01, Tue), 2528 (Z01, Tue), 2529 (Z01, Tue), 2530 (Z01, Tue), 2537 (Z01, Tue), 2545 (Z01, Tue), 2556 (Z01, Tue), 2566 (Z01, Tue), 2569 (Z01, Tue), 2570 (Z01, Tue), 2573 (Z01, Tue), 2574 (Z01, Tue)	Kim, Daehyun	1402 (H01, Mon)
Kanninen, Petri	2315 (L05, Tue)	Keller, Valérie	399 (A03, Tue)	Kim, Dajeong	1837 (I05, Sun)
Kano, Akira	557 (A03, Wed)	Kelley, Shana	2090 (K03, Thu)	Kim, Do Hyung	763 (B04, Mon)
Kano, Shinya	1160 (D01, Tue)	Kelley, Thomas	2051 (K03, Tue)	Kim, Do Wan	1502 (H03, Tue)
Kanomata, Kensaku	2625 (Z02, Wed)	Kelley, Tracy	302 (A03, Mon)	Kim, Dong	2524 (Z01, Tue), 2560 (Z01, Tue)
Kanomata, Kensaku	2283 (L04, Mon)	Kelly, James	1262 (E02, Wed)	Kim, Dong Sung	1498 (H03, Tue)
Kantnerová, Kristýna	2030 (K01, Mon)	Kemell, Marianna	1465 (H02, Mon)	Kim, Dong Sung	1502 (H03, Tue), 1504 (H03, Tue)
Kanungo, Rohit	632 (B01, Sun)	Kendall, Alexander	2005 (I07, Mon)	Kim, Dong Yeong	1911 (I05, Thu)
Kao, Kun-Che	931 (B07, Wed)	Kendrick, Ian	1608 (I02, Wed), 1702 (I03, Wed)	Kim, Dong-Joo	2253 (L03, Wed), 2430 (M01, Wed), 2457 (M01, Wed), 2458 (M01, Wed)
Kao, Yung-Hua	1527 (H03, Wed)	Kenis, Paul	1630 (I02, Thu), 2236 (L02, Thu)	Kim, Dong-Wan	524 (A03, Wed)
Kao-Ian, Wathanyu	55 (A01, Mon)	Kensy, Victoria	2066 (K03, Wed)	Kim, Dong-Won	2548 (Z01, Tue), 2551 (Z01, Tue), 2553 (Z01, Tue)
Kaplan, Amir	1564 (H04, Wed)			Kim, Donghun	1910 (I05, Thu)
Kaplan-Ashiri, Ifat	1242 (E02, Tue)				
Kaplar, Robert	1406 (H01, Mon), 1413 (H01, Tue)				
Karagay, Sedef	1295 (F01, Tue)				
Karakaya, Esra	1295 (F01, Tue), 1305 (F01, Tue)				
Karakaya, Ishak	1295 (F01, Tue), 1305 (F01, Tue)				

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Kim, Dongyeon	1837 (I05, Sun)	Kim, Kwang-Young	1561 (H04, Tue)	Kim, Youngsik	30 (A01, Mon), 102 (A01, Mon), 111 (A01, Mon), 1285 (F01, Tue), 2145 (L01, Wed)
Kim, Guk-Tae	371 (A03, Tue)	Kim, Kwangnam	485 (A03, Wed)	Kim, Youngsoon	2155 (L01, Wed)
Kim, Gwansu	378 (A03, Tue)	Kim, Kyoungghan	2603 (Z01, Tue)	Kim, Yu Seung	199 (A02, Tue), 1687 (I03, Wed), 1719 (I04, Sun), 1738 (I04, Sun), 1753 (I04, Tue), 1991 (I06, Wed), 2007 (I07, Tue), 2008 (I07, Tue), 2012 (I07, Tue)
Kim, Haegyecom	385 (A03, Tue)	Kim, Kyoungsoo	623 (B01, Sun)	Kim, Yun-Tae	767 (B04, Mon)
Kim, Haegyecom	373 (A03, Tue)	Kim, Kyung-Hee	2169 (L02, Mon)	Kim, Yunseok	1524 (H03, Wed)
Kim, Han-Seul	502 (A03, Wed)	Kim, Kyungbae	397 (A03, Tue), 560 (A03, Wed)	Kimble, Ke'La	78 (A01, Mon)
Kim, Hansu	440 (A03, Tue), 449 (A03, Wed), 551 (A03, Wed), 563 (A03, Wed), 564 (A03, Wed)	Kim, Kyunggho	474 (A03, Wed)	Kimura, Katsuya	459 (A03, Wed)
Kim, Hansung	631 (B01, Sun)	Kim, Mijin	717 (B03, Wed), 726 (B03, Wed)	Kimura, Kevin	1604 (I02, Wed)
Kim, Hee Min	370 (A03, Mon), 540 (A03, Wed)	Kim, Min Jung	1083 (C01, Tue)	Kimura, Takashi	1096 (C01, Wed)
Kim, Hee-Gon	2379 (L06, Mon)	Kim, Min Ku	1556 (H04, Tue)	Kimura, Yuta	1957 (I06, Tue)
Kim, Ho-Sung	491 (A03, Wed), 545 (A03, Wed), 1651 (I03, Mon)	Kim, Min-Young	491 (A03, Wed), 545 (A03, Wed), 1651 (I03, Mon)	Kindle, Michael	2599 (Z01, Tue)
Kim, Hoe Chul	1250 (E02, Tue)	Kim, Minsu	863 (B06, Tue)	King, Clarence	1333 (F02, Tue), 1334 (F02, Tue), 2600 (Z01, Tue)
Kim, Hong Mo	653 (B01, Tue)	Kim, Minwoo	852 (B06, Tue)	King, Laurie	1808 (I04, Wed), 2346 (L05, Wed)
Kim, Hun	506 (A03, Wed)	Kim, Mu Hyeon	662 (B01, Tue)	King, Sean	1181 (D02, Mon), 1476 (H02, Tue)
Kim, Hwan Kyu	653 (B01, Tue), 981 (B08, Mon)	Kim, Mu Hyeon	663 (B01, Tue)	Kintner-Meyer, Michael C. W.	26 (A01, Mon)
Kim, Hyeonsu	1291 (F01, Tue)	Kim, Myong-Hwan	1977 (I06, Tue)	Kirk, Charlotte	1605 (I02, Wed)
Kim, Hyoung Woo	1438 (H01, Wed)	Kim, Myung Jun	1250 (E02, Tue), 1269 (F01, Mon), 1627 (I02, Thu)	Kirk, Donald	161 (A01, Wed), 1690 (I03, Wed), 1712 (I03, Thu), 2076 (K03, Wed)
Kim, Hyoung-Juhn	1759 (I04, Tue), 1785 (I04, Wed), 1812 (I04, Wed)	Kim, Myung Jun	1228 (E02, Mon)	Kirk, Kevin	2063 (K03, Wed)
Kim, Hyoung-Juhn	1774 (I04, Wed)	Kim, Myungsoo	896 (B06, Thu)	Kirkpatrick, Kyle	818 (B05, Thu)
Kim, Hyoungchul	542 (A03, Wed), 1937 (I06, Mon)	Kim, Na Young	1761 (I04, Tue)	Kirner, Joel	48 (A01, Mon)
Kim, Hyun Jong	449 (A03, Wed), 551 (A03, Wed), 564 (A03, Wed)	Kim, Nam Seon	554 (A03, Wed)	Kirsimäe, Kalle	1723 (I04, Sun), 2308 (L05, Mon)
Kim, Hyun-Soo	200 (A02, Tue)	Kim, Nam-In	2534 (Z01, Tue)	Kirtley, John	1633 (I02, Thu)
Kim, Hyunah	1682 (I03, Tue)	Kim, Ryang	2246 (L03, Wed)	Kirz, Janos	2338 (L05, Wed)
Kim, Hyungjun	1827 (I05, Sun)	Kim, Sang	2524 (Z01, Tue), 2560 (Z01, Tue)	Kishida, Ryo	1013 (B08, Tue)
Kim, Hyungjun	1556 (H04, Tue)	Kim, Sang Hyeon	2561 (Z01, Tue)	Kishor, Koshal	1273 (F01, Mon), 1273 (L02, Thu)
Kim, Hyunwoo	102 (A01, Mon)	Kim, Sang Ouk	769 (B04, Mon), 983 (B08, Mon)	Kishor, Koshal	1688 (I03, Wed)
Kim, In Gyoo	625 (B01, Sun), 657 (B01, Tue)	Kim, Sang-Hyung	2553 (Z01, Tue)	Kissel, Daniel	2545 (Z01, Tue), 2556 (Z01, Tue), 2573 (Z01, Tue), 2574 (Z01, Tue)
Kim, J. R.	601 (A03, Thu)	Kim, Sang-Hyook	1429 (H01, Tue)	Kisslinger, Kim	1077 (C01, Tue)
Kim, Jae	2246 (L03, Wed)	Kim, Sang-Woo	1554 (H04, Tue), 1557 (H04, Tue), 1567 (H04, Wed)	Kitano, Naoki	1770 (I04, Tue)
Kim, Jae cheon	758 (B04, Mon), 784 (B04, Tue)	Kim, Seokbeom	2479 (M02, Mon)	Kjeang, Erik	1962 (I06, Tue), 1992 (I06, Wed)
Kim, Jae Chul	373 (A03, Tue), 385 (A03, Tue)	Kim, Seokwoo	92 (A01, Mon)	Klarr, Tyler	1186 (D02, Mon)
Kim, Jae Jeong	1659 (I03, Mon)	Kim, Seong In	541 (A03, Wed)	Klein, Brianna	1413 (H01, Tue)
Kim, Jae Jeong	1250 (E02, Tue), 1291 (F01, Tue), 1627 (I02, Thu)	Kim, Seong-Min	1570 (H04, Wed)	Klein, Walter	1743 (I04, Mon), 1883 (I05, Wed)
Kim, Jae Jin	2321 (L05, Tue)	Kim, Seongsu	1567 (H04, Wed)	Kleiner, Karin	376 (A03, Tue)
Kim, Jae-Chan	524 (A03, Wed)	Kim, Seung Hyun	1361 (F02, Thu)	Klie, Robert	360 (A03, Mon)
Kim, Jae-Hun	397 (A03, Tue), 502 (A03, Wed), 559 (A03, Wed), 560 (A03, Wed)	Kim, Seung Wan	282 (A03, Sun)	Kloppenburger, Jan	1782 (I04, Wed)
Kim, Jae-Woo	583 (A03, Thu)	Kim, Seung Won	70 (A01, Mon)	Kluczowski, Ryszard	1307 (F01, Tue)
Kim, Jaewon	1303 (F01, Tue)	Kim, Soo	442 (A03, Wed)	Kluth, George	1368 (G01, Mon)
Kim, Jang-Kyo	400 (A03, Tue), 413 (A03, Tue)	Kim, Soo Jung	554 (A03, Wed)	Klyukin, Konstantin	357 (A03, Mon), 1078 (C01, Tue)
Kim, Janghyuk	1424 (H01, Tue), 1426 (H01, Tue)	Kim, Soo Min	1837 (I05, Sun)	Knap, Jaroslaw	2286 (L04, Tue)
Kim, Jayoung	2443 (M01, Wed)	Kim, Soo Young	864 (B06, Tue)	Knap, Vaclav	286 (A03, Sun), 532 (A03, Wed)
Kim, Je-Deok	1802 (I04, Wed)	Kim, Soo-Kil	1627 (I02, Thu), 1659 (I03, Mon)	Knauth, Philippe	362 (A03, Mon), 416 (A03, Tue)
Kim, Jeong Pil	593 (A03, Thu), 1961 (I06, Tue)	Kim, Soojeong	259 (A03, Sun), 260 (A03, Sun)	Kneer, Alexander	1816 (I04, Thu)
Kim, Jeonghyun	1542 (H04, Mon)	Kim, Soojin	2553 (Z01, Tue)	Knehr, Kevin	138 (A01, Tue)
Kim, Jeongyong	863 (B06, Tue)	Kim, Steve	2426 (M01, Wed)	Knights, Shanna	1744 (I04, Mon), 2170 (L02, Mon)
Kim, Ji Man	763 (B04, Mon)	Kim, Suhyun	1424 (H01, Tue), 1426 (H01, Tue), 1531 (H03, Wed)	Knipe, Jennifer	2385 (L06, Tue)
Kim, Ji Won	68 (A01, Mon), 70 (A01, Mon)	Kim, Suk Lae	149 (A01, Wed)	Knips, Marcus	250 (A03, Sun)
Kim, Jihye	1557 (H04, Tue)	Kim, Sun Ung	1281 (F01, Mon)	Knoche, Krysti	2113 (L01, Mon), 2339 (L05, Wed)
Kim, JiHyun	1423 (H01, Tue), 1424 (H01, Tue), 1426 (H01, Tue), 1531 (H03, Wed)	Kim, Sungsoo	781 (B04, Tue), 783 (B04, Tue)	Knysh, Valentina	1247 (E02, Tue)
Kim, Jinseo	105 (A01, Mon)	Kim, Tae Yuh	1567 (H04, Wed)	Ko, Doo-Hyun	756 (B04, Mon)
Kim, Jisoo	1563 (H04, Wed)	Kim, Taekeun	2192 (L02, Tue)	Ko, Hyesoo	2551 (Z01, Tue)
Kim, Jong Kyu	412 (A03, Tue), 1910 (I05, Thu), 1911 (I05, Thu)	Kim, Un-Hyuck	505 (A03, Wed)	Ko, Hyunhyub	1568 (H04, Wed)
Kim, Jongsoo	389 (A03, Tue)	Kim, Won Jung	1437 (H01, Tue)	Ko, Jae Jun	1785 (I04, Wed)
Kim, Ju Seong	1682 (I03, Tue)	Kim, Wochul	1506 (H03, Tue)	Ko, Seung Hyeon	636 (B01, Sun), 2383 (L06, Mon)
Kim, Ju Young	84 (A01, Mon)	Kim, Y. E.	601 (A03, Thu)	Ko, Young-Jin	2156 (L01, Wed), 2379 (L06, Mon)
Kim, Jun Young	1765 (I04, Tue)	Kim, Yeong Eun	440 (A03, Tue), 551 (A03, Wed), 563 (A03, Wed)	Ko, Yun-Hyuk	1144 (D01, Mon)
Kim, Jun-Yong	2156 (L01, Wed)	Kim, Yong-Sang	1518 (H03, Wed)	Kobayashi, Hikaru	459 (A03, Wed)
Kim, Jung Ho	1592 (I01, Wed)	Kim, Yonggil	111 (A01, Mon)	Kobayashi, Masaharu	1378 (G01, Tue), 1470 (H02, Tue)
Kim, Jung-Hyun	46 (A01, Mon)	Kim, Yongmin	1720 (I04, Sun)	Kobayashi, Masaya	2360 (L05, Thu)
Kim, Jungbae	2246 (L03, Wed)	Kim, Yoong-Ahm	545 (A03, Wed)	Kobayashi, Wataru	24 (A01, Mon), 28 (A01, Mon)
Kim, Kang Lib	2562 (Z01, Tue), 2593 (Z01, Tue)	Kim, Yoong-Ahm	491 (A03, Wed), 1651 (I03, Mon)	Kobori, Yasuhiro	912 (B07, Tue)
Kim, KangSoo	1266 (E02, Wed)	Kim, Youdong	2608 (Z01, Tue)	Kobori, Yoshihiro	2046 (K01, Tue)
Kim, Ki Tae	1072 (C01, Tue)	Kim, Youn Sang	2160 (L01, Wed)		
Kim, Ki-Joong	2412 (M01, Tue)	Kim, Young Sik	1072 (C01, Tue)		
Kim, Kiwon	1894 (I05, Wed)	Kim, Young-Jun	449 (A03, Wed)		
Kim, Kwang Hwan	1291 (F01, Tue)	Kim, Younghee	727 (B03, Wed)		
		Kim, Younghee	729 (B03, Wed)		
		Kim, Younghye	864 (B06, Tue)		

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Kobosko, Steven	908 (B07, Tue), 1842 (I05, Mon)	Kräutler, Bernhard	1005 (B08, Tue)	Kupeccki, Jakob	1307 (F01, Tue)
Kobryn, Alexander	902 (B07, Tue)	Krauz, Mariusz	1307 (F01, Tue)	Kuperus, Nicolas	2424 (M01, Wed)
Koch, Brian	267 (A03, Sun)	Krbal, Milos	2401 (L06, Tue)	Kuramata, Akito	1419 (H01, Tue), 1420 (H01, Tue), 1421 (H01, Tue), 1423 (H01, Tue)
Kocha, Shyam	1591 (I01, Wed), 1743 (I04, Mon)	Kreider, Melissa	2346 (L05, Wed)	Kurashina, Masashi	2475 (M02, Mon)
Kodambaka, Suneel	839 (B06, Tue), 1445 (H01, Wed)	Kreller, Courtney	2007 (I07, Tue), 2008 (I07, Tue), 2012 (I07, Tue), 2598 (Z01, Tue)	Kurihara, Yuusuke	2029 (K01, Mon)
Koehler, Andrew	1409 (H01, Mon), 1420 (H01, Tue)	Kremliakova, Natalia	1771 (I04, Tue)	Kurioka, Tomoyuki	2028 (K01, Mon)
Koehne, Jessica	1578 (H04, Wed), 2476 (M02, Mon), 2502 (M02, Tue), 2505 (M02, Tue), 2506 (M02, Tue)	Krieg, Henning	1601 (I02, Wed)	Kuroda, Daisuke	668 (B02, Sun), 2027 (K01, Mon)
Kogo, Takeshi	668 (B02, Sun), 2027 (K01, Mon)	Krishnamoorthy, Sankarganesh	242 (A02, Thu)	Kuroda, Rihito	2416 (M01, Tue)
Koike, Takashi	2074 (K03, Wed)	Krishnan, Rishikesh	1183 (D02, Mon)	Kurokawa, Hiromi	1010 (B08, Tue)
Kojima, Katsunori	100 (A01, Mon)	Krishnan, Sadagopan	2073 (K03, Wed), 2252 (L03, Wed)	Kushida, Yuta	1775 (I04, Wed)
Kojima, Takahiko	1002 (B08, Tue)	Kropf, A. Jeremy	2332 (L05, Wed)	Kushner, Douglas	195 (A02, Tue)
Kolb, Manuel	2287 (L04, Tue)	Kroschel, Matthias	1666 (I03, Tue)	Kusoglu, Ahmet	195 (A02, Tue), 1584 (I01, Wed)
Kölbach, Moritz	1854 (I05, Sun)	Kruger, Andries	1601 (I02, Wed)	Kuttiyiel, Kurian	2174 (L02, Mon)
Kolek, Martin	257 (A03, Sun)	Krüger, Hartmut	1805 (I04, Wed)	Kuwabata, Susumu	1886 (I05, Wed)
Kolhekar, Snehal	53 (A01, Mon), 140 (A01, Tue), 2572 (Z01, Tue)	Krumdick, Gregory	253 (A03, Sun)	Kuwata, Naoaki	1957 (I06, Tue)
Kolla, Praveen	1608 (I02, Wed)	Kruss, Sebastian	678 (B02, Mon)	Kuznetsov, Oleg	624 (B01, Sun)
Kollbek, Kamila	1530 (H03, Wed)	Kruusenberg, Ivar	2315 (L05, Tue)	Kwabi, David	22 (A01, Sun)
Kolluri, Suryanarayana	1331 (F02, Tue), 1357 (F02, Wed)	Krylov, Denis	814 (B05, Thu)	Kwak, Seon-Yeong	2415 (M01, Tue)
Kolomoyets, Olga	47 (A01, Mon)	Ku, Ting-An	1489 (H03, Mon)	Kwak, Won-Jin	577 (A03, Thu)
Koman, Volodymyr	731 (B03, Wed), 888 (B06, Thu), 891 (B06, Thu), 2273 (L04, Mon), 2415 (M01, Tue)	Kub, Francis	1409 (H01, Mon), 1410 (H01, Mon), 1420 (H01, Tue)	Kwan, Jason	1365 (F02, Thu), 1666 (I03, Tue)
Komatsu, Mugi	1913 (I05, Thu)	Kuball, Martin	1416 (H01, Tue)	Kweon, Heejun	631 (B01, Sun)
Komini Babu, Siddharth	2313 (L05, Tue)	Kubota, Jun	2020 (I07, Tue)	Kwon, Bob Jin	360 (A03, Mon)
Komori, Tomoyuki	481 (A03, Wed)	Kubota, Shigeru	2625 (Z02, Wed)	Kwon, Dae	2524 (Z01, Tue), 2560 (Z01, Tue), 2561 (Z01, Tue)
Komori, Yasuhiro	584 (A03, Thu)	Kucernak, Anthony	219 (A02, Wed), 1742 (I04, Mon), 1784 (I04, Wed), 1789 (I04, Wed), 1820 (I05, Sun), 2306 (L05, Mon)	Kwon, Deok-Hwang	373 (A03, Tue)
Konarov, Aishuak	407 (A03, Tue)	Kuchakova, Iryna	1176 (D02, Mon)	Kwon, Hyejin	726 (B03, Wed)
Kondo, Hiroki	176 (A01, Thu)	Kudin, Lev	2108 (L01, Mon)	Kwon, Hyeokjae	866 (B06, Wed), 887 (B06, Wed)
Kondo, Hiroki	265 (A03, Sun)	Kudithipudi, Dhireesha	1380 (G01, Tue)	Kwon, HyukSang	1266 (E02, Wed)
Kondo, Takahiro	2317 (L05, Tue)	Kudo, Kenji	1581 (I01, Wed)	Kwon, Ki Chang	864 (B06, Tue)
Kondo, Toshiaki	948 (B07, Thu)	Kuhar, Korina	1912 (I05, Thu)	Kwon, Kyungjung	1804 (I04, Wed)
Kondo, Yasumitsu	1111 (C02, Mon)	Kuhn, Danielle	1872 (I05, Tue)	Kwon, Oh Chan	593 (A03, Thu), 1961 (I06, Tue)
Kong, Eugene	17 (A01, Sun)	Kühnel, Ruben-Simon	404 (A03, Tue), 2516 (Z01, Tue)	Kwon, Oh Hyeon	2628 (Z02, Wed)
Kong, Fantai	66 (A01, Mon)	Kukli, Kaupo	1465 (H02, Mon), 1475 (H02, Tue)	Kwon, Oh Joong	1291 (F01, Tue)
Kong, Nak-Won	1765 (I04, Tue)	Kulesza, Pawel	735 (B03, Wed), 2206 (L02, Wed), 2302 (L05, Mon), 2309 (L05, Mon), 2325 (L05, Tue), 2341 (L05, Wed), 2343 (L05, Wed)	Kwon, Oh Sung	1291 (F01, Tue)
Kongkanand, Anusorn	1796 (I04, Wed), 2173 (L02, Mon)	Kulhavý, Jiří	1708 (I03, Thu)	Kwon, Seung-Ryong	2126 (L01, Tue)
Kongsawatvoragul, Ketsuda	2279 (L04, Mon)	Kulkarni, Ambarish	2344 (L05, Wed)	Kwon, Yonghyun	623 (B01, Sun), 636 (B01, Sun)
Kongstein, Ole Edvard	1773 (I04, Wed)	Kulkarni, Aniruddha	1598 (I02, Wed)	Kwon, Youngkook	1837 (I05, Sun)
Konidena, Rajendra	1427 (H01, Tue)	Kumagai, Hiromu	1878 (I05, Wed)	Kwong, Kyei-Sing	1141 (C02, Wed)
Konishi, Hirokazu	1313 (F01, Wed)	Kumar, Amarendra	1527 (H03, Wed)	Kysil, D.	1149 (D01, Mon)
Konishi, Toshifumi	1204 (E01, Tue)	Kumar, Amit	1565 (H04, Wed)		
Kono, Koichi	1775 (I04, Wed)	Kumar, Amit	835 (B06, Mon)		
Koo, Boheun	1439 (H01, Wed)	Kumar, Hemant	1951 (I06, Tue)		
Koo, Boram	85 (A01, Mon), 86 (A01, Mon)	Kumar, Hemanth	2582 (Z01, Tue)		
Kook, Mati	2315 (L05, Tue)	Kumar, Nagesh	835 (B06, Mon)		
Koper, Marc	2110 (L01, Mon), 2234 (L02, Thu)	Kumar, Nitin	2270 (L04, Mon)		
Korolev, Ivan	1292 (F01, Tue)	Kumar, Rakesh	2476 (M02, Mon), 2502 (M02, Tue)		
Koronfel, Mohamed	1042 (C01, Mon)	Kumar, Sanjay	1248 (E02, Tue)		
Korsen, Joshua	685 (B02, Mon)	Kumar, Sudhir	871 (B06, Wed), 1145 (D01, Mon)		
Korshin, Gregory	1063 (C01, Tue), 1064 (C01, Tue), 2134 (L01, Wed)	Kumar, Vishank	468 (A03, Wed)		
Kosasang, Soracha	2353 (L05, Wed)	Kumaraguru, Swami	1585 (I01, Wed)		
Kota, Manikantan	2536 (Z01, Tue)	Kumei, Hideyuki	1770 (I04, Tue)		
Kovac, Janez	1175 (D02, Mon)	Kummel, Andrew	1405 (H01, Mon)		
Kovalev, Igor	302 (A03, Mon)	Kumta, Prashant	6 (A01, Sun), 37 (A01, Mon), 39 (A01, Mon), 40 (A01, Mon), 60 (A01, Mon), 1640 (I03, Mon), 1670 (I03, Tue)		
Koverga, Andrii	2166 (L02, Mon)	Kung, Chun Haow	2136 (L01, Wed)		
Kovtun, Yuriy	990 (B08, Mon)	Kunimoto, Masahiro	1241 (E02, Tue)		
Kowal, Andrzej	2218 (L02, Thu), 2220 (L02, Thu)	Kuo, Ding-Yuan	1782 (I04, Wed), 2211 (L02, Wed)		
Kowalski, Jeffrey	228 (A02, Wed), 230 (A02, Wed)	Kuo, Li-Yu	2619 (Z02, Wed)		
Koyama, Keiichi	2637 (Z03, Wed)	Kuo, Mei-Chen	1749 (I04, Mon)		
Koyama, Seiya	1886 (I05, Wed)	Kuo, Yue	1166 (D01, Wed), 1397 (G01, Tue)		
Koyano, Bunsho	702 (B03, Tue)				
Kozawa, Daichi	888 (B06, Thu), 891 (B06, Thu), 2273 (L04, Mon)				
Kracke, Frauke	1615 (I02, Wed)				
Krakhella, Kjersti	181 (A02, Tue)				
Krause, Frederick	283 (A03, Sun)				
Krause, Robert	1254 (E02, Wed)				

L

Labbe, Christophe	1156 (D01, Tue)
Labbe, Fabien	1733 (I04, Sun)
Labbe, Matthew	1197 (E01, Tue)
Labella, Jorge	798 (B05, Wed), 982 (B08, Mon)
Labrador, Natalie	1875 (I05, Wed)
Labrecque, Raynald	1271 (F01, Mon)
Labrugère, Christine	1156 (D01, Tue)
Labuta, Jan	1011 (B08, Tue)
Labyedh, Nouha	1213 (E01, Wed)
Ladpli, Purim	130 (A01, Tue)
Lafforgue, Clémence	1727 (I04, Sun), 1778 (I04, Wed), 2539 (Z01, Tue)
Lagarde, Delphine	1156 (D01, Tue)
Lagergren, Carina	1750 (I04, Mon)
Lagowski, Jacek	1384 (G01, Tue), 1387 (G01, Tue)
Lahiri, Abhishek	1209 (E01, Wed)
Lahlalia, Ayoub	1469 (H02, Tue)
Lai, Chun-Yen	2459 (M01, Wed)
Lai, Po-Hao	2137 (L01, Wed), 2459 (M01, Wed), 2468 (M01, Thu)
Lai, Shen	2521 (Z01, Tue)
Lai, Yu-Liang	1249 (E02, Tue)
Lain Amador, Lucia	1261 (E02, Wed)
Laine, Richard	443 (A03, Wed), 2595 (Z01, Tue)
Laitz, Madeleine	1742 (I04, Mon)
Lajaunie, L.	1149 (D01, Mon)
Lamb, Joshua	117 (A01, Tue), 122 (A01, Tue), 126 (A01, Tue), 235 (A02, Wed), 275 (A03, Sun)
Lambert, Benjamin	747 (B03, Thu)
Lambert, Colin	985 (B08, Mon), 1020 (B08, Tue)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Lambert, Joseph	2261 (L03, Thu), 2530 (Z01, Tue)	Lee, Chang-Hee	974 (B08, Sun)	Lee, Jungwoo	594 (A03, Thu)
Lambert, Timothy	2138 (L01, Wed)	Lee, Chao-Yu	1489 (H03, Mon)	Lee, Ki Bong	1303 (F01, Tue)
Lamprinakos, Nicholas	637 (B01, Sun), 1025 (B09, Sun)	Lee, Che Yoon	2628 (Z02, Wed)	Lee, Kug-Seung	1910 (I05, Thu)
Lanasky, Katelyn	2261 (L03, Thu), 2530 (Z01, Tue)	Lee, Chengkuo	1529 (H03, Wed)	Lee, Kwan	1490 (H03, Mon)
Lancaster, Mitchell	2269 (L04, Mon)	Lee, Chi Hwan	1556 (H04, Tue)	Lee, Kwan Hyi	1482 (H03, Mon)
Landau, Uziel	2580 (Z01, Tue)	Lee, Chih-Yen	1395 (G01, Tue), 1396 (G01, Tue)	Lee, Kwang-Sup	1144 (D01, Mon)
Landers, Alan	1612 (I02, Wed)	Lee, Choong-Gon	83 (A01, Mon), 99 (A01, Mon)	Lee, Kwangmin	1076 (C01, Tue)
Landesfeind, Johannes	402 (A03, Tue)	Lee, Chun-Yen	1238 (E02, Tue)	Lee, Kyu Hwan	1679 (I03, Tue), 1692 (I03, Wed), 1704 (I03, Wed)
Landesman, Jean-Pierre	1146 (D01, Mon)	Lee, Churl Seung	627 (B01, Sun)	Lee, Ling	1576 (H04, Wed)
Landi, Brian	434 (A03, Tue)	Lee, Dahye	2525 (Z01, Tue)	Lee, M. S.	601 (A03, Thu)
Landon, James	228 (A02, Wed), 1289 (F01, Tue), 2354 (L05, Thu)	Lee, Daniel	1720 (I04, Sun)	Lee, Michael	775 (B04, Tue)
Landon-Lane, Leatham	189 (A02, Tue)	Lee, Daniel	2066 (K03, Wed)	Lee, Min Hyung	755 (B04, Mon)
Landry, Markita	676 (B02, Mon), 683 (B02, Mon), 687 (B02, Mon)	Lee, Dong Geun	440 (A03, Tue), 449 (A03, Wed), 564 (A03, Wed)	Lee, Min Jae	1774 (I04, Wed)
Lang, Michael	1597 (I02, Wed)	Lee, Dong Ki	1847 (I05, Mon)	Lee, Minoh	1655 (I03, Mon)
Langa, Fernando	812 (B05, Wed), 987 (B08, Mon)	Lee, Dong Un	1716 (I03, Thu), 1798 (I04, Wed)	Lee, Moo-Seok	1761 (I04, Tue)
Lange, Heather	2528 (Z01, Tue)	Lee, Dong-Hoon	1761 (I04, Tue)	Lee, Myeong Hwan	294 (A03, Mon)
Langenbacher, Rachel	674 (B02, Mon), 685 (B02, Mon), 746 (B03, Thu)	Lee, Dongbok	1083 (C01, Tue)	Lee, Myoung Kyou	86 (A01, Mon)
Langlois, David	1991 (I06, Wed)	Lee, Dongcheul	85 (A01, Mon)	Lee, Nae-Eung	2442 (M01, Wed)
Lankiang, Styven	2299 (L05, Mon)	Lee, Dongho	1917 (I05, Thu)	Lee, Sang Bok	760 (B04, Mon)
Lao-atiman, Woranunt	52 (A01, Mon)	Lee, Doohee	2253 (L03, Wed), 2430 (M01, Wed), 2457 (M01, Wed), 2458 (M01, Wed)	Lee, Sang Yeon	105 (A01, Mon), 1453 (H01, Wed)
Lapidus, Saul	291 (A03, Mon)	Lee, Eun-Su	1761 (I04, Tue)	Lee, Sechan	294 (A03, Mon)
Lapointe, François	743 (B03, Thu)	Lee, Eungje	442 (A03, Wed)	Lee, Sehee	458 (A03, Wed)
Laramie, Michael	302 (A03, Mon)	Lee, Eunji	2253 (L03, Wed), 2430 (M01, Wed), 2457 (M01, Wed), 2458 (M01, Wed)	Lee, Seokwon	2280 (L04, Mon)
Larrude, Dunieskys	1803 (I04, Wed)	Lee, Eunjik	2169 (L02, Mon)	Lee, Seon-Hwa	527 (A03, Wed)
Laruelle, Stephane	120 (A01, Tue)	Lee, Geonyeop	1531 (H03, Wed)	Lee, Seong Beom	1348 (F02, Wed), 1350 (F02, Wed), 1356 (F02, Wed)
Laskowski, Forrest	1904 (I05, Thu)	Lee, Glenn	436 (A03, Tue)	Lee, Seung Hee	1388 (G01, Tue)
Latu-Romain, Laurence	1118 (C02, Tue)	Lee, Gunhee	1076 (C01, Tue)	Lee, Seung Hwa	2635 (Z02, Wed), 2652 (Z03, Wed)
Lau, Hiu Ming	1708 (I03, Tue)	Lee, Gwan-Hyung	1408 (H01, Mon)	Lee, Seung Woo	629 (B01, Sun), 775 (B04, Tue), 2017 (I07, Tue), 2197 (L02, Wed)
Lau, Irene	2392 (L06, Tue)	Lee, Gwo-Bin	1485 (H03, Mon), 1514 (H03, Tue)	Lee, Seung Woo	763 (B02, Mon)
Lau, Ka-Cheong	259 (A03, Sun), 262 (A03, Sun)	Lee, Han Sol	866 (B06, Wed), 887 (B06, Wed)	Lee, Seung-Bok	1117 (C02, Mon)
Laucournet, Richard	612 (A04, Mon)	Lee, Heung Chan	589 (A03, Thu)	Lee, Seung-Jae	1144 (D01, Mon)
Lauret, Jean-Sébastien	716 (B03, Wed), 722 (B03, Wed), 932 (B07, Wed)	Lee, Ho Jin	1391 (G01, Tue), 1392 (G01, Tue)	Lee, Sheldon	1717 (I04, Sun)
Laursen, Anders	1903 (I05, Thu)	Lee, Hongkyung	42 (A01, Mon), 587 (A03, Thu)	Lee, Shiwoo	1791 (I04, Wed), 2361 (L05, Thu)
Lavanya, Nehru	2469 (M01, Thu)	Lee, Hoo-jeong	759 (B04, Mon)	Lee, Shiwoo	2320 (L05, Tue), 2363 (L05, Thu)
Lavarda, Giulia	982 (B08, Mon)	Lee, Hsu-Feng	1801 (I04, Wed)	Lee, So Young	1759 (I04, Tue), 1774 (I04, Wed), 1785 (I04, Wed)
Lavorgna, Marino	1088 (C01, Wed)	Lee, Hung-Sui	312 (A03, Mon), 323 (A03, Mon)	Lee, Su Chan	405 (A03, Tue)
Lavrijsen, Reinoud	1908 (I05, Thu)	Lee, Hyungwoo	1931 (I06, Mon)	Lee, Sun Sook	865 (B06, Tue)
Lavrik, Nickolay	49 (A01, Mon)	Lee, Hyunjoo	1642 (I03, Mon)	Lee, Sungjoo	838 (B06, Tue), 852 (B06, Tue)
Lawton, Jamie	214 (A02, Tue), 215 (A02, Tue)	Lee, Jack	1029 (B09, Sun)	Lee, Sungwon	2534 (Z01, Tue)
Lazar, Petr	833 (B06, Mon)	Lee, Jack	896 (B06, Thu)	Lee, SunSoo	1266 (E02, Wed)
Le, Linh	403 (A03, Tue)	Lee, Jae Chun	2546 (Z01, Tue)	Lee, Sunyoung	580 (A03, Thu)
Le, Phung	438 (A03, Tue)	Lee, Jae Kwang	659 (B01, Tue), 2217 (L02, Wed), 2351 (L05, Wed), 2382 (L06, Mon)	Lee, Szetsen	857 (B06, Tue)
Le, Phung	403 (A03, Tue), 2654 (Z03, Wed)	Lee, Jae Myeong	2101 (L01, Mon)	Lee, Tae Hoon	862 (B06, Tue)
Le, Xuan Tuan	1219 (E01, Wed)	Lee, Jae-Joon	758 (B04, Mon), 784 (B04, Tue), 1881 (I05, Wed)	Lee, Taekyoung	2383 (L06, Mon)
Le Bideau, Jean	4 (A01, Sun)	Lee, Jaeyoung	659 (B01, Tue), 2217 (L02, Wed), 2351 (L05, Wed), 2382 (L06, Mon)	Lee, Ten-Ya	1539 (H04, Mon)
Le Gac, Stéphane	932 (B07, Wed)	Lee, Jang Mee	2058 (K03, Tue)	Lee, Wen-Yong	1746 (I04, Mon)
Le Potier, Isabelle	2466 (M01, Thu)	Lee, Jeong Rak	1376 (G01, Mon)	Lee, Wook-Seong	2156 (L01, Wed)
Le Roux, Xavier	1173 (D01, Wed)	Lee, Ji Yeon	763 (B04, Mon)	Lee, Wook-Seong	2379 (L06, Mon)
Le Van-Jodin, Lucie	10 (A01, Sun)	Lee, Ji-Eun	1144 (D01, Mon)	Lee, Yong Min	91 (A01, Mon), 92 (A01, Mon), 598 (A03, Thu)
Leach, Gary	1240 (E02, Tue)	Lee, Jihoon	2559 (Z01, Tue)	Lee, Yongwon	549 (A03, Wed)
Leary, Edmund	985 (B08, Mon)	Lee, Jim Yang	341 (A03, Mon), 1686 (I03, Wed)	Lee, Yueh-Lin	1941 (I06, Mon)
Leban, Levon	77 (A01, Mon)	Lee, Jin Hong	282 (A03, Sun)	Leeuwner, Magrieta	1792 (I04, Wed)
Lebedev, Nikolai	2070 (K03, Wed), 2244 (L03, Wed)	Lee, Jin Hwa	1765 (I04, Tue)	Lefebvre, Jacques	743 (B03, Thu)
Lebedeva, Maria	985 (B08, Mon)	Lee, Jinhee	838 (B06, Tue)	Lefrançois, Pauline	2130 (L01, Tue)
Lebouin, Chrystelle	399 (A03, Tue)	Lee, Jinwoo	412 (A03, Tue)	Léger, Christophe	2248 (L03, Wed)
Leclerc, Sébastien	1795 (I04, Wed)	Lee, John In	2533 (Z01, Tue)	Lehnert, Nicolai	2575 (Z01, Tue)
Lécuyer, Margaud	585 (A03, Thu)	Lee, Jonathan	1423 (H01, Tue)	Lehnert, Werner	1049 (C01, Mon)
Leddy, Johna	2339 (L05, Wed), 2511 (Z01, Tue)	Lee, Jong-Ho	1937 (I06, Mon)	Lei, Chao	2216 (L02, Wed)
Ledesma-Garcia, Janet	2493 (M02, Tue)	Lee, Jong-Won	504 (A03, Wed)	Lei, Chao	1991 (I06, Wed)
Lee, Albert	1687 (I03, Wed), 1991 (I06, Wed)	Lee, Joohye	864 (B06, Tue), 1654 (I03, Mon)	Lei, Wu	2434 (M01, Tue)
Lee, Bong Ho	763 (B04, Mon)	Lee, Joonbong	1391 (G01, Tue), 1392 (G01, Tue)	Leis, Jaan	2315 (L05, Tue)
Lee, Byeongyong	629 (B01, Sun), 775 (B04, Tue)	Lee, Ju Sung	1774 (I04, Wed)	Leising, Randy	569 (A03, Thu)
Lee, Byoung Hun	838 (B06, Tue)	Lee, Juhwan	1563 (H04, Wed)	Leiter, Kenneth	2286 (L04, Tue)
Lee, Byoung-Sun	314 (A03, Mon)	Lee, Jung Woo	1541 (H04, Mon)	Letemtre, Sylvain	2486 (M02, Mon)
Lee, Byoung-Sun	367 (A03, Mon), 1236 (E02, Tue)	Lee, Jung-In	301 (A03, Mon), 588 (A03, Thu), 2584 (Z01, Tue), 2596 (Z01, Tue)	Lemme, Max	894 (B06, Thu)
Lee, Chan Min	593 (A03, Thu), 1961 (I06, Tue)	Lee, Jung-In	547 (A03, Wed)	Lemmens, Herman	529 (A03, Wed)
Lee, Chang Young	767 (B04, Mon)	Lee, Jung-Woo	1931 (I06, Mon)	Lenihan, Catherine	197 (A02, Tue), 1980 (I06, Wed)
		Lee, Jungchul	2479 (M02, Mon)	Leonard, Daniel	258 (A03, Sun), 1697 (I03, Wed)
		Lee, Junghun	204 (A02, Tue), 205 (A02, Tue)	Léonard, François	708 (B03, Tue), 709 (B03, Tue)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Leonard, Kwati	1934 (I06, Mon), 1943 (I06, Mon)	Li, Junrui	1719 (I04, Sun)	Liang, Zhixiu	2219 (L02, Thu), 2230 (L02, Thu)
Leonard, McLain	2149 (L01, Wed)	Li, Juntao	1370 (G01, Mon)	Liao, Chen	259 (A03, Sun), 262 (A03, Sun), 568 (A03, Thu)
Leone, Stephen	1863 (I05, Tue)	Li, Kun-Che	95 (A01, Mon)	Liao, Chun-Chien	533 (A03, Thu)
Leonhardt, Alessandra	842 (B06, Tue)	Li, Lan	1097 (C01, Wed)	Liao, Hsin-Yi	1398 (G01, Tue)
Lercher, Johannes	1634 (I02, Thu)	Li, Li	2051 (K03, Tue)	Liao, Lily	302 (A03, Mon)
Lerner, Michael	258 (A03, Sun), 521 (A03, Wed)	Li, Mengjun	1903 (I05, Thu)	Liao, Shijun	2188 (L02, Tue)
Lesel, Benjamin	145 (A01, Wed)	Li, Mengping	2547 (Z01, Tue), 2578 (Z01, Tue)	Liaw, Bor Yann	121 (A01, Tue), 596 (A03, Thu)
Leskelä, Markku	1465 (H02, Mon)	Li, Na	1197 (E01, Tue)	Liberale, Alessandro	2258 (L03, Thu)
Less, Gregory	368 (A03, Mon)	Li, Nan	859 (B06, Tue)	Licoccia, Silvia	212 (A02, Tue), 213 (A02, Tue)
Lessner, Philip	144 (A01, Wed)	Li, Qibo	126 (A01, Tue)	Liehr, Michael	1382 (G01, Tue)
Lestriez, Bernard	4 (A01, Sun), 473 (A03, Wed), 2271 (L04, Mon), 2272 (L04, Mon)	Li, Qiuyan	42 (A01, Mon), 548 (A03, Wed)	Lien, Larry	611 (A04, Mon)
Lettenmeier, Philipp	15 (A01, Sun)	Li, Qizhao	988 (B08, Mon)	Ligen, Yorick	179 (A02, Tue)
Leu, Hoang-Jyh	95 (A01, Mon)	Li, Ruiyu	1049 (C01, Mon)	Lilienkamp, Gerhard	1926 (I05, Thu), 2290 (L04, Tue)
Leu, Jihpeng	835 (B06, Mon)	Li, Shaoping	1327 (F02, Tue)	Lill, Thorsten	1180 (D02, Mon)
Leung, Albert	2465 (M01, Thu)	Li, Shelly	2641 (Z03, Wed)	Lim, Eun Taek	2635 (Z02, Wed), 2652 (L03, Wed)
Leung, Michael	1707 (I03, Thu)	Li, Shilin	917 (B07, Tue)	Lim, Hee-Dae	580 (A03, Thu), 1236 (E02, Tue)
Levallois, Christophe	1146 (D01, Mon)	Li, T.	654 (B01, Tue)	Lim, Jinkyu	1642 (I03, Mon)
LeVasseur, Grant	1019 (B08, Tue)	Li, Tao	2328 (L05, Tue)	Lim, Jongsun	865 (B06, Tue)
Leverick, Graham	578 (A03, Thu), 2276 (L04, Mon)	Li, Teng	1511 (H03, Tue)	Lim, June Yeong	881 (B06, Wed), 901 (B06, Thu), 953 (B07, Thu), 2623 (Z02, Wed), 2624 (Z02, Wed)
Levin, Eduard	2194 (L02, Tue)	Li, Tianyu	2609 (Z01, Tue)	Lim, Jung-Ae	1837 (I05, Sun)
Levitas, Benjamin	2630 (Z02, Wed)	Li, Wangxiang	710 (B04, Mon)	Lim, Katie	631 (B01, Sun)
Levshov, Dmitry	750 (B03, Thu)	Li, Wei	116 (A01, Mon)	Lim, Min-Hwa	72 (A01, Mon), 73 (A01, Mon), 101 (A01, Mon), 1649 (I03, Mon)
Levy, Naomi	966 (B08, Sun), 2301 (L05, Mon)	Li, Wenjun	1405 (H01, Mon)	Lim, Sangwoo	1389 (G01, Tue)
Lew, Tedrick	2415 (M01, Tue)	Li, Wenyuan	2363 (L05, Thu)	Lim, Seong Chu	765 (B04, Mon)
Lewerenz, Meinert	250 (A03, Sun)	Li, Wenzhen	1736 (I04, Sun), 2009 (I07, Tue)	Lim, Taeho	1627 (I02, Thu)
Lewinski, Krzysztof	1637 (I03, Mon)	Li, Wenzhi	433 (A03, Tue)	Lim, Tak-Hyoung	1117 (C02, Mon)
Lewis, Nathan	877 (B06, Wed), 1923 (I05, Thu), 2059 (K03, Tue), 2123 (L01, Tue), 2135 (L01, Wed), 2142 (L01, Wed), 2633 (Z02, Wed)	Li, Xiangyang	191 (A02, Tue)	Lim, Ye Sol	503 (A03, Wed)
Lewis, Sylvia	269 (A03, Sun), 2338 (L05, Wed)	Li, Xiangzhi	724 (B03, Wed)	Lim, Yi Rang	865 (B06, Tue)
Leys, Christophe	1176 (D02, Mon)	Li, Xiaohan	2384 (L06, Tue), 2387 (L06, Tue)	Lima, Fabio	1830 (I05, Sun), 2190 (L02, Tue)
Li, Bin	566 (A03, Wed)	Li, Xiaolan	1513 (H03, Tue)	Limmer, David	2294 (L04, Tue)
Li, Bin	207 (A02, Tue), 216 (A02, Wed), 239 (A02, Thu), 241 (A02, Thu), 243 (A02, Thu)	Li, Xiaolin	50 (A01, Mon), 354 (A03, Mon), 453 (A03, Wed)	Lin, Chao-Sung	1103 (C01, Wed), 1129 (C02, Tue), 1130 (C02, Tue)
Li, Bin	345 (A03, Mon)	Li, Xiaomeng	788 (B05, Tue)	Lin, Cheng-Hung	316 (A03, Mon)
Li, Bing	1811 (I04, Wed), 2518 (Z01, Tue)	Li, Xing	1234 (E02, Tue)	Lin, Cheng-Wei	811 (B05, Wed)
Li, Bing-Han	857 (B06, Tue)	Li, Xue	447 (A03, Wed)	Lin, Chia-De	1374 (G01, Mon)
Li, Binsong	456 (A03, Wed)	Li, Yan	670 (B02, Mon), 704 (B03, Tue)	Lin, Chia-Her	857 (B06, Tue)
Li, Caiwei	2434 (M01, Wed)	Li, Yangxing	48 (A01, Mon)	Lin, Chih-Ting	1489 (H03, Mon)
Li, Chaoyang	1452 (H01, Wed)	Li, Yanlong	818 (B05, Thu)	Lin, Chih-Yang	1029 (B09, Sun)
Li, Cheng	2254 (L03, Thu)	Li, Yawei	1736 (I04, Sun), 2000 (I07, Mon)	Lin, Ching-Wei	753 (B03, Thu)
Li, Chunhe	1838 (I05, Sun)	Li, Yawei	1660 (I03, Mon), 1725 (I04, Sun)	Lin, Ching-Yao	911 (B07, Tue)
Li, Chunhui	415 (A03, Tue)	Li, Ye	510 (A03, Wed), 2586 (Z01, Tue)	Lin, Chuen-Chang	562 (A03, Wed)
Li, Danlei	219 (A02, Wed)	Li, Ying	1092 (C01, Wed)	Lin, Chun-Cheng	1267 (E02, Wed)
Li, Dawei	1953 (I06, Tue)	Li, Yolanda	811 (B05, Wed)	Lin, Chun-Ho	1547 (H04, Tue)
Li, Dongguo	1699 (I03, Wed), 2298 (L05, Mon)	Li, Yong-Liang	2356 (L05, Thu)	Lin, Chun-Yu	2455 (M01, Wed), 2463 (M01, Thu)
Li, Fang-Fang	795 (B05, Wed)	Li, Yongdang	1966 (I06, Tue), 1974 (I06, Tue), 1975 (I06, Tue), 1976 (I06, Tue)	Lin, Feng	1948 (I06, Tue)
Li, Gang	1924 (I05, Thu)	Li, Yuanchao	218 (A02, Wed)	Lin, Francis	513 (A03, Wed), 1579 (H04, Wed)
Li, Genong	1327 (F02, Tue)	Li, Yun	206 (A02, Tue), 499 (A03, Wed), 513 (A03, Wed), 661 (B01, Tue), 1579 (H04, Wed)	Lin, Haibin	341 (A03, Mon)
Li, Guanchen	5 (A01, Sun)	Li, Yunsong	346 (A03, Mon), 2278 (L04, Mon)	Lin, Hsin-Chih	1184 (D02, Mon)
Li, Guangfu	1680 (I03, Tue)	Li, Zhaolin	422 (A03, Tue)	Lin, Janice	811 (B05, Wed)
Li, Guosheng	210 (A02, Tue), 232 (A02, Wed), 234 (A02, Wed)	Li, Zhen-Yu	2097 (L01, Mon)	Lin, Jin-Sheng	691 (B02, Tue)
Li, Hai (Helen)	1379 (G01, Tue)	Li, Zheng	606 (A04, Mon)	Lin, Jingyu	1421 (H01, Tue)
Li, Hongjuan	1055 (C01, Mon), 1061 (C01, Tue)	Li, Zhifei	193 (A02, Tue), 446 (A03, Wed)	Lin, John	1612 (I02, Wed)
Li, Huaiguang	2250 (L03, Wed)	Li, Zhongjian	1301 (F01, Tue)	Lin, Kaixiang	22 (A01, Sun)
Li, Hui	2001 (I07, Mon)	Li, Zhuo	314 (A03, Mon), 377 (A03, Tue)	Lin, Liyu	191 (A02, Tue)
Li, Jak	2285 (L04, Tue), 2390 (L06, Tue)	Li, Zhuo	7 (A01, Sun)	Lin, Na	41 (A01, Mon)
Li, Jialang	2386 (L06, Tue)	Lian, Keryn	736 (B03, Thu), 2285 (L04, Tue), 2390 (L06, Tue)	Lin, Ruoqian	323 (A03, Mon)
Li, Jian-Feng	2182 (L02, Tue)	Lian, Tianquan	936 (B07, Wed), 1867 (I05, Tue)	Lin, Song	2089 (K03, Thu)
Li, Jiangtian	2208 (L02, Wed)	Lian, Yongfu	790 (B05, Tue)	Lin, Taicheng	1653 (I03, Mon)
Li, Jianguo	1938 (I06, Mon), 1939 (I06, Mon)	Liang, Chaoping	66 (A01, Mon)	Lin, Wan Chen	676 (B02, Mon)
Li, Jianlin	253 (A03, Sun)	Liang, Hong	431 (A03, Tue)	Lin, Wei-Chun	1431 (H01, Tue)
Li, Jie	382 (A03, Tue), 384 (A03, Tue)	Liang, Jiaojiao	2235 (L02, Thu)	Lin, Wei-Tse	1431 (H01, Tue)
Li, Jie	274 (A03, Sun)	Liang, Jierui	885 (B06, Wed)	Lin, Xuan	1262 (E02, Wed)
Li, Jing	1277 (F01, Mon)	Liang, Shuquan	2613 (Z01, Tue)	Lin, Ya-Hsuan	2326 (L05, Tue), 2362 (L05, Thu)
Li, Jinghao	1563 (H04, Wed)	Liang, Wentao	1702 (I03, Wed)	Lin, Yan-Cheng	1539 (H04, Mon)
Li, Jinghong	1463 (H02, Mon)	Liang, Xinhua	274 (A03, Sun), 374 (A03, Tue), 427 (A03, Tue), 2626 (Z02, Wed)	Lin, Yan-Fen	2196 (L02, Wed), 2215 (L02, Wed)
Li, Jingkun	1703 (I03, Wed), 1710 (I03, Thu)	Liang, Yifan	1463 (H02, Mon)	Lin, Yan-Ting	1238 (E02, Tue)
Li, Jinke	382 (A03, Tue), 384 (A03, Tue)	Liang, Yong	1262 (E02, Wed)	Lin, Ye	2320 (L05, Tue), 2363 (L05, Thu)
Li, Jun	2484 (M02, Mon)			Lin, Yi	583 (A03, Thu)
Li, Junhuan	913 (B07, Tue)			Lin, Yi-Chieh	1527 (H03, Wed)
				Lin, Yi-Jie	1435 (H01, Tue)
				Lin, Yu-Hsiang	12 (A01, Sun)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Lin, Yu-Jhen	1501 (H03, Tue)	Liu, K.	1289 (F01, Tue), 2354 (L05, Thu)	Lopez, Jorge	414 (A03, Tue)
Lin, Yu-Shan	1390 (G01, Tue)	Liu, Leo	203 (A02, Tue)	López del Amo, Juan Miguel	579 (A03, Thu)
Lin, Yuehe	50 (A01, Mon), 317 (A03, Mon), 1024 (B09, Sun), 1154 (D01, Tue), 2367 (L06, Mon), 2473 (M02, Mon), 2482 (M02, Mon), 2501 (M02, Tue), 2549 (Z01, Tue)	Liu, Lifeng	1713 (I03, Thu)	Lopez Ruiz, Juan A.	1822 (I05, Sun)
Lin, Yuehe	1683 (I03, Wed)	Liu, Lin	1959 (I06, Tue), 1964 (I06, Tue)	Lopez-Alvarez, Miguel	1430 (H01, Tue)
Lin, Yupo	1283 (F01, Tue)	Liu, Meilin	1335 (F02, Tue)	López-Vidrier, Julian	1158 (D01, Tue)
Lin, Yuxiao	321 (A03, Mon), 346 (A03, Mon)	Liu, Mengran	969 (B08, Sun)	Lorenz, Juergen	1461 (H02, Mon)
Lin, Zhipeng	640 (B01, Sun)	Liu, Mingzhao	2184 (L02, Tue)	Lörtscher, Emanuel	1259 (E02, Wed)
Lin, Zong-Hong	1499 H03 (Tue), 1501 (H03, Tue), 1503 (H03, Tue), 1546 (H04, Tue)	Liu, Ning	1918 (I05, Thu), 2398 (L06, Tue)	Lottin, Olivier	1745 (I04, Mon), 1795 (I04, Wed)
Linardi, Marcelo	1593 (I01, Wed)	Liu, Ping	314 (A03, Mon), 367 (A03, Mon), 1236 (E02, Tue), 1326 (F02, Tue), 2365 (L06, Mon)	Lou, Bih	2508 (M02, Tue)
Lincot, Daniel	1310 (F01, Wed)	Liu, Ping	2184 (L02, Tue)	Lou, Kun	1760 (I04, Tue)
Lindbergh, Göran	1750 (I04, Mon), 1986 (I06, Wed)	Liu, Pingwei	648 (B01, Mon), 888 (B06, Thu), 891 (B06, Thu), 1564 (H04, Wed), 2273 (L04, Mon), 2617 (Z02, Wed)	Loubet, Nicolas	1370 (G01, Mon)
Linder, Christian	1954 (I06, Tue)	Liu, Qian	1511 (H03, Tue)	Louie, Mikayla	1673 (I03, Tue)
Lindgren, Fredrik	392 (A03, Tue)	Liu, Qiankun	1173 (D01, Wed)	Lounis, Brahim	726 (B03, Wed)
Lindström, Rakel	1750 (I04, Mon)	Liu, Qing	324 (A03, Mon)	Louvain, Nicolas	602 (A03, Thu)
Lindstrom, Ulf	2251 (L03, Wed)	Liu, Shizhong	2184 (L02, Tue)	Love, Corey	1235 (E02, Tue)
Ling, Sichun	1055 (C01, Mon), 1061 (C01, Tue), 1062 (C01, Tue), 1070 (C01, Tue)	Liu, Shude	143 (A01, Wed)	Lowe, Frank	1415 (H01, Tue)
Ling, Yunhan	1122 (C02, Tue)	Liu, Sizhe	1304 (F01, Tue)	Lu, Bo	430 (A03, Tue)
Linhart, Abigail	2537 (Z01, Tue)	Liu, T. Leo	220 (A02, Wed), 264 (A03, Sun)	Lu, Deyu	2184 (L02, Tue)
Linic, Suljo	927 (B07, Wed), 1868 (I05, Tue), 2348 (L05, Wed)	Liu, Tianyuan	775 (B04, Tue)	Lu, Dongping	315 (A03, Mon), 1902 (I05, Thu)
Lininger, Christianna	1341 (F02, Wed)	Liu, Tong	823 (B05, Thu), 828 (B05, Thu)	Lu, Fang	2184 (L02, Tue)
Link, Stephan	930 (B07, Wed)	Liu, Wei	1732 (I04, Sun)	Lu, Jun	193 (A02, Tue), 258 (A03, Sun)
Linnett, Gary	2114 (L01, Tue)	Liu, Wen	2590 (Z01, Tue)	Lu, Kuo-Chang	1394 (G01, Tue)
Liou, Frank	274 (A03, Sun)	Liu, Xi-Wen	1390 (G01, Tue)	Lu, Linfang	2324 (L05, Tue)
Lipomi, Darren	1540 (H04, Mon)	Liu, Xiaowei	1726 (I04, Sun), 1790 (I04, Wed)	Lu, Linfang	1729 (I04, Sun), 2147 (L01, Wed)
Lisenkov, Aleksey	1206 (E01, Wed)	Liu, Xiaoyang	1077 (C01, Tue)	Lu, Lu Lin	1708 (I03, Thu)
Liška, Alan	2036 (K01, Mon)	Liu, Xiaoyang	818 (B05, Thu)	Lu, Ming-Chang	182 (A02, Tue)
Liske, Romy	1254 (E02, Wed)	Liu, Xingbo	339 (A03, Mon)	Lu, Ming-Chen	1398 (G01, Tue), 1399 (G01, Tue)
Lissau, Henriette	982 (B08, Mon)	Liu, Xingbo	2363 (L05, Thu)	Lu, Ming-Pei	1512 (H03, Tue)
Litster, Shawn	1582 (I01, Wed), 1776 (I04, Wed)	Liu, Xinyu	1218 (E01, Wed)	Lu, Ming-Yen	1512 (H03, Tue)
Liu, Albert Tianxiang	648 (B01, Mon), 731 (B03, Wed), 888 (B06, Thu), 891 (B06, Thu), 1564 (H04, Wed), 2273 (L04, Mon)	Liu, Xu	1318 (F01, Wed)	Lu, Ming-Yen	1448 (H01, Wed)
Liu, Bernard Hao-Chih	33 (A01, Mon)	Liu, Xuehan	2465 (M01, Thu)	Lu, Nanshu	1535 (H04, Mon)
Liu, Bin	2111 (L01, Mon)	Liu, Yadong	425 (A03, Tue)	Lu, Pengtao	2066 (K03, Wed)
Liu, Bin	1998 (I07, Mon)	Liu, Yahua	1230 (E02, Mon)	Lu, Ping	2422 (M01, Tue)
Liu, Bo	206 (A02, Tue)	Liu, Yijin	352 (A03, Mon)	Lu, Shih-Yuan	1684 (I03, Wed)
Liu, Caihong	236 (A02, Wed), 2649 (Z03, Wed)	Liu, Yipeng	1058 (C01, Tue)	Lu, Weihao	2427 (M01, Wed), 2444 (M01, Wed)
Liu, Changhong	1964 (I06, Tue)	Liu, Yuan	2242 (L03, Wed)	Lu, Wenquan	48 (A01, Mon), 350 (A03, Mon), 460 (A03, Wed)
Liu, Chao	430 (A03, Tue)	Liu, Yuan	882 (B06, Wed), 1525 (H03, Wed)	Lu, Xiao Wei	1708 (I03, Thu)
Liu, Chaofeng	308 (A03, Mon)	Liu, Yuyu	1616 (I02, Wed), 1617 (I02, Wed)	Lu, Xiaochuan	210 (A02, Tue), 232 (A02, Wed), 234 (A02, Wed)
Liu, Chaoyuan	886 (B06, Wed)	Liu, Yuzhe	2445 (M01, Wed), 2446 (M01, Wed)	Lu, Xing	794 (B05, Wed), 795 (B05, Wed), 807 (B05, Wed), 828 (B05, Thu)
Liu, Chenchen	1379 (G01, Tue)	Liu, Yuzi	350 (A03, Mon)	Lu, Xu	2445 (M01, Wed), 2446 (M01, Wed)
Liu, Cong	1618 (I02, Wed)	Liu, Zhe	425 (A03, Tue), 460 (A03, Wed)	Lu, Ying-Hsin	1390 (G01, Tue)
Liu, Cong	1619 (I02, Wed)	Liu, Zhen	346 (A03, Mon)	Lu, Yunfeng	338 (A03, Mon)
Liu, Ertai	1124 (C02, Tue)	Liu, Zhen	94 (A01, Mon), 530 (A03, Wed)	Lu, Zhanpeng	1055 (C01, Mon), 1061 (C01, Tue), 1062 (C01, Tue), 1070 (C01, Tue)
Liu, Fang	338 (A03, Mon)	Liu, Zhixiao	343 (A03, Mon)	Lu, Zhuoxin	1657 (I03, Mon)
Liu, Fupin	814 (B05, Thu), 815 (B05, Thu)	Liu, Zhiqiang	1091 (C01, Wed)	Lu, Ziheng	172 (A01, Thu)
Liu, Fuqiang	1379 (G01, Tue)	Liyanage, Wipula	1635 (I02, Thu)	Lu, Ziheng	3 (A01, Sun)
Liu, Gang	1882 (I05, Wed)	Lo, Chun-Li	897 (B06, Thu)	Luanwuthi, Santamon	421 (A03, Tue)
Liu, Gao	41 (A01, Mon), 349 (A03, Mon), 470 (A03, Wed)	Lo, I-Wen	1472 (H02, Tue)	Lubers, Alia	1734 (I04, Sun)
Liu, Guohua	1621 (I02, Wed)	Lo, Joe	2467 (M01, Thu)	Lucht, Brett	455 (A03, Wed), 496 (A03, Wed), 555 (A03, Wed)
Liu, Guokun	1253 (E02, Wed)	Loaiza, Laura	602 (A03, Thu)	Lucht, Brett	1949 (I06, Tue)
Liu, Haodong	289 (A03, Mon), 1236 (E02, Tue), 2365 (L06, Mon)	Lobo, Derrek	620 (B01, Sun)	Ludvik, Jiri	2030 (K01, Mon), 2036 (K01, Mon)
Liu, Hong	2254 (L03, Thu)	Lochala, Joshua	395 (A03, Tue), 1195 (E01, Tue)	Ludwig, Jonathan	842 (B06, Tue)
Liu, Jian	2361 (L05, Thu), 2363 (L05, Thu)	Lockhart de la Rosa, César	890 (B06, Thu)	Ludwig, Karl	1936 (I06, Mon)
Liu, Jilei	450 (A03, Wed)	Lockwood, David	1171 (D01, Wed)	Luer, Larry	748 (B03, Tue)
Liu, Jin	415 (A03, Tue)	Lockwood, David	1162 (D01, Tue)	Łukaczyńska, Monika	1265 (E02, Wed)
Liu, Jingyuan	1890 (I05, Wed)	Loffreda, David	1714 (I03, Thu)	Luk'yanenko, Tatiana	1247 (E02, Tue)
Liu, Jinping	1183 (D02, Mon), 1463 (H02, Mon)	Loftager, Simon	401 (A03, Tue)	Luna, Lunet	1407 (H01, Mon), 1409 (H01, Mon), 1410 (H01, Mon)
Liu, Jiurong	516 (A03, Wed)	Logan, Kyle	2034 (K01, Mon)	Lundberg, Kimberly	1955 (I06, Tue), 1956 (I06, Tue)
Liu, Jun	42 (A01, Mon), 207 (A02, Tue), 297 (A03, Mon), 315 (A03, Mon), 394 (A03, Tue), 548 (A03, Wed), 587 (A03, Thu)	Loganathan, S.	328 (A03, Mon)	Lundgren, Cynthia	2618 (Z02, Wed)
Liu, Junyu	1619 (I02, Wed), 1620 (I02, Wed)	Loganathan, S.	318 (A03, Mon)	Lundström, Mari	1041 (C01, Mon), 1292 (F01, Tue)
		Loiseau, Annick	677 (B02, Mon)	Lungerich, Dominik	975 (B08, Sun)
		Lölsberg, Jonas	1298 (F01, Tue)	Luo, Dayou	2510 (M02, Tue)
		Loney, Charles	2013 (I07, Tue)	Luo, Hongmei	2329 (L05, Tue)
		Loney, Charles	2002 (I07, Mon)	Luo, Jian	203 (A02, Tue), 220 (A02, Wed), 264 (A03, Sun)
		Long, Jeffrey	1235 (E02, Tue)	Luo, Jing	12 (A01, Sun)
		Longo, Roberto	66 (A01, Mon)	Luo, Jingshan	1622 (I02, Wed)
		Lopes, Pietro	633 (B01, Sun), 1696 (I03, Wed), 1699 (I03, Wed), 2161 (L02, Mon), 2168 (L02, Mon), 2175 (L02, Tue), 2298 (L05, Mon)	Luo, Langli	50 (A01, Mon)
		Lopez, Arielle	2500 (M02, Tue)		

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Luo, Liuxuan	2183 (L02, Tue)	Mahoney, Eric	2467 (M01, Thu)	Marinskiy, Dmitriy	1387 (G01, Tue)
Luo, Simon	2284 (L04, Tue)	Mahunnop, Fakkao	1957 (I06, Tue)	Mariscal, Antonio	1147 (D01, Mon)
Luo, Wilson	2022 (K01, Mon)	Mahurin, Shannon	516 (A03, Wed)	Markevich, Alexandr	47 (A01, Mon)
Luo, Xiaoying	495 (A03, Wed)	Mai, Liqiang	56 (A01, Mon), 1694 (I03, Wed)	Markevich, Elena	462 (A03, Wed)
Luo, Yue	724 (B03, Wed)	Maikap, Siddheswar	2431 (M01, Wed)	Markiewicz, Matthew	2170 (L02, Mon)
Luopa, Sean	1637 (I03, Mon)	Maillard, Frederic	1587 (I01, Wed), 1644 (I03, Mon), 1668 (I03, Tue), 1733 (I04, Sun), 1778 (I04, Wed), 1779 (I04, Wed), 2539 (Z01, Tue)	Markötter, Henning	477 (A03, Wed), 1772 (I04, Tue), 1818 (I04, Thu)
Luscombe, Christine	913 (B07, Tue), 1151 (D01, Mon)	Mainka, Julia	1745 (I04, Mon)	Markovic, Nenad	633 (B01, Sun), 1696 (I03, Wed), 1699 (I03, Wed), 2161 (L02, Mon), 2168 (L02, Mon), 2175 (L02, Tue), 2298 (L05, Mon)
Luski, Shalom	309 (A03, Mon)	Maire, Eric	473 (A03, Wed), 2271 (L04, Mon)	Markovsky, Boris	310 (A03, Mon)
Lust, Enn	652 (B01, Tue), 1203 (E01, Tue), 1723 (I04, Sun), 2308 (L05, Mon)	Maity, Partha	1858 (I05, Tue)	Markus, Torsten	1138 (C02, Wed)
Lutkenhaus, Jodie	1978 (I06, Tue)	Maize, Kerry	1418 (H01, Tue)	Markus, Torsten	1119 (C02, Tue)
Luxa, Jan	833 (B06, Mon), 861 (B06, Tue)	Majasan, Jude	2589 (Z01, Tue)	Maroni, Victor	466 (A03, Wed)
Lv, Haifeng	2298 (L05, Mon)	Majumdar, Diptarka	1332 (F02, Tue)	Marquez, Carlos	1474 (H02, Tue)
Lv, Hong	1811 (I04, Wed), 2518 (Z01, Tue)	Majumder, Mainak	620 (B01, Sun)	Marquez, Justin	859 (B06, Tue)
Lv, Pengpeng	422 (A03, Tue)	Majumder, Soumyadip	441 (A03, Tue)	Marris-Morini, Delphine	1173 (D01, Wed)
Lv, Yunhui	191 (A02, Tue)	Makarov, Alexander	1477 (H02, Tue)	Marsal, Lluís	1523 (H03, Wed), 2397 (L06, Tue), 2499 (M02, Tue)
Lvov, Serguei	1066 (C01, Tue)	Makinde, Zainab	962 (B08, Sun)	Marschall, Roland	1905 (I05, Thu)
Lyalin, Andrey	2189 (L02, Tue)	Maksuta, Irina	47 (A01, Mon)	Marsh, Kristofer	811 (B05, Wed)
Lynch, Robert	197 (A02, Tue), 1980 (I06, Wed), 2395 (L06, Tue)	Maldonado, Stephen	952 (B07, Thu), 1212 (E01, Wed), 2269 (L04, Mon), 2575 (Z01, Tue)	Marshak, Michael	174 (A01, Thu)
Lyonnard, Sandrine	248 (A03, Sun)	Malenfant, Patrick	743 (B03, Thu)	Marshall, Aaron	189 (A02, Tue), 1320 (F01, Wed), 1715 (I03, Thu)
Lysenko, Vladimir	1149 (D01, Mon)	Mali, Gregor	256 (A03, Sun)	Marshall, Alan	806 (B05, Wed)
Lyson-Sypien, Barbara	1530 (H03, Wed)	Malik, Monu	344 (A03, Mon)	Martel, Richard	677 (B02, Mon)
Lytken, Ole	999 (B08, Mon)	Malko, Daniel	1820 (I05, Sun), 2306 (L05, Mon)	Martens, Ian	2259 (L03, Thu)
Lyu, Hailong	516 (A03, Wed)	Mallia, Christopher	2521 (Z01, Tue)	Martens, Isaac	1797 (I04, Wed), 1817 (I04, Thu)
Lyu, Min	670 (B02, Mon)	Malzbender, Jürgen	480 (A03, Wed)	Martin, Jen	2426 (M01, Wed)
Lyu, Yuqi	1698 (I03, Wed)	Mamtani, Kuldeep	634 (B01, Sun)	Martin, Max	975 (B08, Sun)
M					
M., Kamaraj	155 (A01, Wed)	Man, Tran	438 (A03, Tue), 2654 (Z03, Wed)	Martin, Nazario	688 (B02, Tue), 766 (B04, Mon), 796 (B05, Wed)
Ma, Chunrong	81 (A01, Mon)	Manco, Judith	1808 (I04, Wed)	Martin, Nazario	799 (B05, Wed)
Ma, Dongling	1866 (I05, Tue)	Mandemaker, Laurens	2371 (L06, Mon)	Martin, Steve	88 (A01, Mon), 171 (A01, Thu), 1333 (F02, Tue)
Ma, Jeffrey	1202 (E01, Tue)	Mandoj, Federica	997 (B08, Mon)	Martin, Steve	1214 (E01, Wed)
Ma, Jianmin	2235 (L02, Thu)	Mangisetti, Sandhya Rani	155 (A01, Wed)	Martin, Vincent	1779 (I04, Wed)
Ma, Jiarong	1055 (C01, Mon), 1062 (C01, Tue), 1070 (C01, Tue)	Mangolini, Lorenzo	419 (A03, Tue)	Martín Yerga, Daniel	2119 (L01, Tue)
Ma, Jing	2590 (Z01, Tue)	Manichev, Viacheslav	1903 (I05, Thu)	Martinati, Miles	699 (B03, Tue)
Ma, Lu	258 (A03, Sun)	Manikandan, Arumugam	1571 (H04, Wed)	Martinez, Alma	1430 (H01, Tue)
Ma, Nattapol	621 (B01, Sun), 2353 (L05, Wed)	Manikandan, Maidhily	1737 (I04, Sun), 1806 (I04, Wed), 2564 (Z01, Tue)	Martinez, Ulises	1717 (I04, Sun), 2204 (L02, Wed), 2313 (L05, Tue)
Ma, Teng	2283 (L04, Mon)	Manke, Ingo	477 (A03, Wed), 1772 (I04, Tue), 1818 (I04, Thu)	Martinez-Díaz, M. Victoria	798 (B05, Wed)
Ma, Ying	300 (A03, Mon)	Mann, Florian	678 (B02, Mon)	Martinez-Duarte, Rodrigo	1034 (B09, Sun), 1039 (B09, Tue), 1040 (B09, Tue)
Ma, Yuxi	1942 (I06, Mon)	Mann, Shane	224 (A02, Wed)	Martinez-Duarte, Rodrigo	1031 (B09, Sun), 1035 (B09, Sun), 1038 (B09, Tue)
Ma, Zhenqiang	1563 (H04, Wed)	Manna, Liberato	2105 (L01, Mon), 2124 (L01, Tue)	Martinick, Brian	1382 (G01, Tue)
Ma, Zi-Feng	81 (A01, Mon)	Manna, Subal	388 (A03, Tue)	Martinková, Markéta	1017 (B08, Tue)
Macak, Jan	1101 (C01, Wed), 1215 (E01, Wed), 2401 (L06, Tue)	Mano, Nicolas	2249 (L03, Wed)	Martino, Joao	1460 (H02, Mon), 1468 (H02, Mon), 1473 (H02, Tue), 1480 (H02, Tue)
Macambira, Christian	1473 (H02, Tue)	Manoori, Hamed	1065 (C01, Tue)	Martins, Pedro	1696 (I03, Wed), 2168 (L02, Mon)
Macazo, Florika	2052 (K03, Tue), 2240 (L03, Wed)	Manthiram, Arumugam	292 (A03, Mon)	Martucci, Renan	1466 (H02, Mon)
MacFarlane, Douglas	2157 (L01, Wed)	Manthiram, Karthish	1614 (I02, Wed)	Maruizumi, Takuya	1174 (D01, Wed)
Machida, Katsuyuki	1204 (E01, Tue)	Mantooth, H.	1245 (E02, Tue)	Maruyama, Shigeo	642 (B01, Mon), 702 (B03, Tue)
MacInnes, Molly	2575 (Z01, Tue)	Manuel, James	51 (A01, Mon)	Maruyama, Takahiro	1724 (I04, Sun), 2587 (Z01, Tue), 2592 (Z01, Tue)
MacLeod, Bradley	646 (B01, Mon)	Manyala, Ncholu	96 (A01, Mon)	Marzec, Mateusz	1530 (H03, Wed)
Madani, Seyed	526 (A03, Wed)	Manzi-Orezzoli, Victoria	1793 (I04, Wed)	Mascaro, Aaron	2158 (L01, Wed)
Madiseti, Shailesh	1405 (H01, Mon)	Mao, Chengyu	288 (A03, Mon)	Mascaro, Lucia	1098 (C01, Wed)
Madito, Moshawe	96 (A01, Mon)	Mao, Xianwen	2128 (L01, Tue)	Mascher, Peter	1189 (D02, Mon)
Madkikar, Pankaj	1721 (I04, Sun)	Maran, Flavio	2021 (K01, Mon)	Masese, Titus	380 (A03, Tue)
Mados, Edna	561 (A03, Wed)	Marcaccio, Massimo	813 (B05, Wed), 2084 (K03, Thu)	Mashazi, Philani	962 (B08, Sun)
Madou, Marc	666 (B02, Sun), 1033 (B09, Sun)	Marchesi, Marco	1385 (G01, Tue)	Masikhwa, Tshifhiwa	96 (A01, Mon)
Maeda, Chihiro	973 (B08, Sun)	Marco, James	517 (A03, Wed)	Maslovara, Sladjana	2386 (L06, Tue)
Maeda, Hiromitsu	998 (B08, Mon)	Mariani, Simone Dario	1385 (G01, Tue)	Masse, Robert	345 (A03, Mon)
Maeda, Kazuhiko	2515 (Z01, Tue)	Maric, Radenka	45 (A01, Mon), 1643 (I03, Mon), 1728 (I04, Sun), 2281 (L04, Mon), 2282 (L04, Mon), 2323 (L05, Tue), 2355 (L05, Thu), 2449 (M01, Wed)	Massen-Hane, Michael	1296 (F01, Tue)
Mæhlen, Jan Petter	2588 (Z01, Tue)	Marie, Philippe	1156 (D01, Tue)	Massuti Ballester, Pau	1261 (E02, Wed)
Maeta, Naoya	2083 (K03, Thu)	Marie, Xavier	1156 (D01, Tue)	Mastro, Michael	1407 (H01, Mon)
Magallanes, Gabriel	2080 (K03, Thu)	Marina, Olga	1599 (I02, Wed), 1648 (I03, Mon)	Masu, Kazuya	1204 (E01, Tue)
Magnani, Marina	1082 (C01, Tue)	Mariñas, Victor	798 (B05, Wed)	Masud, Jahangir	1635 (I02, Thu)
Magnussen, Olaf	2118 (L01, Tue), 2611 (Z01, Tue)	Marinelli, Lucas	2606 (Z01, Tue)	Masud, Jahangir	1674 (I03, Tue)
Mahadik, Nadeemullah	1420 (H01, Tue)	Marinkovic, Nebojsa	2167 (L02, Mon)	Masuda, Hideki	948 (B07, Thu)
Mahajan, Devinder	2174 (L02, Mon)	Marinskiy, Dmitriy	1384 (G01, Tue)		
Mahankali, Kiran	148 (A01, Wed)				
Maher, Robert	2143 (L01, Wed)				
Maheshwari, Sharad	2000 (I07, Mon), 2002 (I07, Mon), 2013 (I07, Tue)				
Mahlendorf, Falko	211 (A02, Tue)				
Mahmood, Javeed	762 (B04, Mon)				

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Masurkar, Nirul	515 (A03, Wed)	McVerry, Brian	2547 (Z01, Tue)	Miles, Richard	1177 (D02, Mon)
Maszara, Witold	1456 (H02, Mon)	Meany, Brendan	712 (B03, Tue)	Milewski, Jaroslaw	33 (A01, Mon)
Matanovic, Ivana	1738 (I04, Sun), 2242 (L03, Wed), 2303 (L05, Mon)	Mecheri, Barbara	212 (A02, Tue), 213 (A02, Tue)	Miller, Elisa	853 (B06, Tue)
Matanovic, Ivana	2311 (L05, Tue)	Meda, Lamartine	77 (A01, Mon), 78 (A01, Mon), 79 (A01, Mon), 90 (A01, Mon)	Miller, Eric	1646 (I03, Mon)
Matanovic, Ivana	2337 (L05, Wed)	Medikonda, Manasa	1463 (H02, Mon)	Miller, Hamish	1727 (I04, Sun)
Mathe, Mkhulu	254 (A03, Sun)	Medina, Adan	2096 (L01, Mon), 2496 (M02, Tue)	Miller, John	2643 (Z03, Wed)
Matsui, Hirofumi	1010 (B08, Tue)	Medina, Henry	836 (B06, Mon)	Miller, Steven	2504 (M02, Tue)
Matsui, Ryohei	2414 (M01, Tue)	Medina, Samantha	2257 (L03, Thu)	Miller, Suzanne	1848 (I05, Mon)
Matsumoto, Futoshi	2512 (Z01, Tue), 2513 (Z01, Tue), 2514 (Z01, Tue)	Meduri, Praveen	2234 (L02, Thu)	Miller, Todd	1608 (I02, Wed), 2212 (L02, Wed)
Matsumoto, Hiroshige	1934 (I06, Mon), 1943 (I06, Mon)	Mehmedović, Zerina	1330 (F02, Tue), 2542 (Z01, Tue)	Miller, Zachery	167 (A01, Thu)
Matsumoto, Masashi	2210 (L02, Wed)	Mehra, Nitin	1508 (H03, Tue)	Mills, Allison	1038 (B09, Tue)
Matsumoto, Satoru	2550 (Z01, Tue)	Mehran, Muhammad Taqi	1117 (C02, Mon)	Millstone, Jill	1229 (E02, Mon)
Matsumoto, Taketoshi	459 (A03, Wed)	Mehta, Apurva	2287 (L04, Tue)	Milshstein, Jarrod	228 (A02, Wed)
Matsumura, Yoshimasa	2047 (M01, Tue)	Mehta, Prateek	2003 (I07, Mon)	Milton, Ross	1995 (I07, Mon)
Matsunami, Hiroaki	2091 (K03, Thu)	Mehta, Sanjay	1183 (D02, Mon)	Min, Byoung Koun	1655 (I03, Mon), 1826 (I05, Sun), 1827 (I05, Sun), 1853 (I05, Mon)
Matsuo, Yutaka	802 (B05, Wed), 986 (B08, Mon)	Mehta, Sanjay	1371 (G01, Mon)	Min, Yo-Sep	580 (A03, Thu)
Matsuo, Yutaka	821 (B05, Thu)	Mei, Bing-Ang	164 (A01, Wed)	Minamimoto, Hiro	933 (B07, Wed)
Matsuura, Kentarou	837 (B06, Tue)	Mei, Tian-Sheng	2064 (K03, Wed)	Minegishi, Tsutomu	1888 (I05, Wed), 1922 (I05, Thu)
Mattei, Gerard	314 (A03, Mon), 377 (A03, Tue)	Meier, Jan	1270 (F01, Mon)	Mineta, Shingo	1052 (C01, Mon)
Mattelaer, Felix	1213 (E01, Wed), 1216 (E01, Wed)	Meier, Madeline	2059 (K03, Tue)	Minoshima, Juri	2046 (K01, Tue)
Mattick, Viki	19 (A01, Sun)	Meisner, Kevin	1110 (C02, Mon)	Minteer, Shelley	1995 (I07, Mon), 2241 (L03, Wed)
Mauger, Scott	1794 (I04, Wed)	Meisner, Quinton	278 (A03, Sun)	Minteer, Shelley	1545 (H04, Tue), 2052 (K03, Tue), 2088 (K03, Thu), 2240 (L03, Wed), 2251 (L03, Wed)
Maurya, Sandip	199 (A02, Tue), 229 (A02, Wed), 1738 (I04, Sun), 1753 (I04, Tue), 2007 (I07, Tue), 2008 (I07, Tue), 2012 (I07, Tue)	Mekonnen, Menbere	2461 (M01, Thu)	Miras, Haralampos	1706 (I03, Thu)
Mauzeroll, Janine	2117 (L01, Tue)	Melander, Marko	2270 (L04, Mon)	Mirghni, Abdulmajid	96 (A01, Mon)
Mavrikakis, Manos	2164 (L02, Mon)	Mench, Matthew	13 (A01, Sun), 2257 (L03, Thu)	Misawa, Hiroaki	925 (B07, Wed), 1869 (I05, Tue)
Mayall, Robert	2384 (L06, Tue)	Méndez, Francisco	801 (B05, Wed)	Mishra, Karuna	876 (B06, Wed)
Maye, Sunny	18 (A01, Sun)	Méndez, Manuel	63 (A01, Mon), 322 (A03, Mon)	Mishra, Kuber	1741 (I04, Mon)
Mayer, Matthew	1622 (I02, Wed)	Meng, Hui	640 (B01, Sun)	Mishra, Rohan	1425 (H01, Tue), 2358 (L05, Thu)
Mayes, Richard	1116 (C02, Mon)	Meng, Shirley	183 (A02, Tue)	Miske, Ian	167 (A01, Thu)
Mayor, Dan	310 (A03, Mon)	Meng, Ying	289 (A03, Mon), 594 (A03, Thu)	Missous, Mohmad	2476 (M02, Mon)
Maza, William	1633 (I02, Thu)	Menga, Davide	1721 (I04, Sun)	Mistry, Aashutosh	135 (A01, Tue), 271 (A03, Sun), 281 (A03, Sun), 590 (A03, Thu), 1323 (F02, Tue)
Mazouzi, Driss	473 (A03, Wed)	Menkin, Svetlana	561 (A03, Wed)	Mistry, Neera	1074 (C01, Tue), 2545 (Z01, Tue)
Mazur, Ursula	989 (B08, Mon)	Menningen, Kenneth	2522 (Z01, Tue)	Mitlin, David	141 (A01, Wed), 386 (A03, Tue)
Mazza, Michael	2123 (L01, Tue)	Mérida, Walter	1318 (F01, Wed), 2136 (L01, Wed), 2140 (L01, Wed)	Mitra, Debanjan	1691 (I03, Wed)
Mazzeo, Brian	268 (A03, Sun)	Merino, César	2350 (L05, Wed)	Mitra, Kishalay	1356 (F02, Wed)
Mazzeo, Brian	247 (A03, Sun), 272 (A03, Sun), 363 (A03, Mon)	Merino-Jimenez, Irene	2266 (L03, Thu)	Mitra, Sagar	410 (A03, Tue), 411 (A03, Tue), 490 (A03, Wed)
McAllister, James	1706 (I03, Thu)	Mernissi Cherigui, El Amine	1258 (E02, Wed)	Mitsudo, Koichi	2029 (K01, Mon)
McAlpine, Michael	1532 (H04, Mon)	Merrell, Asriel	79 (A01, Mon)	Mitsushima, Shigenori	2047 (K01, Tue)
Mcardle, Timothy	1368 (G01, Mon)	Merrill, Laura	255 (A03, Sun)	Mittelstaedt, Cortney	1645 (I03, Mon)
Mcbeath, Sean	2597 (Z01, Tue)	Mery, Adrien	467 (A03, Wed)	Mittermeier, Thomas	1721 (I04, Sun)
McBriarty, Martin	2109 (L01, Mon)	Mery, Adrien	147 (A01, Wed)	Mitu, Bogdana	1176 (D02, Mon)
McCathy, Melissa	1191 (D02, Mon)	Merz, Michael	1721 (I04, Sun)	Mitzel, Jens	14 (A01, Sun)
McCay, Katie	1773 (I04, Wed)	Meshot, Eric	703 (B03, Tue)	Miura, Masanori	2625 (Z02, Wed)
McCleary, Madisen	1131 (C02, Tue)	Messinger, Robert	125 (A01, Tue)	Miyahara, Yoichi	2158 (L01, Wed)
McCloy, John	2599 (Z01, Tue)	Messner, Matthew	156 (A01, Wed)	Miyake, Hideaki	635 (B01, Sun)
McClure, Joshua	2618 (Z02, Wed)	Methekar, Ravi	614 (A04, Mon), 2265 (L03, Thu)	Miyamae, Ryohei	557 (A03, Wed)
McConohy, Geoff	231 (A02, Wed)	Metke, Anna	2507 (M02, Tue)	Miyamoto, Fumiya	971 (B08, Sun)
McCool, Geoff	1672 (I03, Tue), 1734 (I04, Sun)	Metkemeijer, Rudolf	1733 (I04, Sun)	Miyauuchi, Yuhei	725 (B03, Wed)
McCrum, Ian	2110 (L01, Mon), 2234 (L02, Thu)	Metzger, Michael	139 (A01, Tue)	Miyazaki, Akinobu	484 (A03, Wed)
Mcculloch, Quinn	859 (B06, Tue)	Meulendyk, Bennett	2418 (M01, Tue)	Miyazawa, Kei	1085 (C01, Tue)
McCurdy, Ryan	811 (B05, Wed)	Meyer, Daniel	678 (B02, Mon)	Mizunoe, Yoshimitsu	668 (B02, Sun)
McDaniel, Anthony	1646 (I03, Mon)	Meyer, Daniel	612 (A04, Mon)	Mizunuma, Mamoru	1052 (C01, Mon)
McDonnell, Elias	215 (A02, Tue)	Meyyappan, M.	2502 (M02, Tue)	Mlynarski, Amy	1074 (C01, Tue)
McEnaney, Joshua	1895 (I05, Wed), 2010 (I07, Tue)	Mi, Hong-wei	2356 (L05, Thu)	Mnysenko, Oleksiy	183 (A02, Tue)
McFarlane, William	222 (A02, Wed)	Mi, Hongyi	1563 (H04, Wed)	Moazzen, Elahe	35 (A01, Mon)
McGehee, Michael	1260 (E02, Wed)	Mi, Zetian	1170 (D01, Wed), 1850 (I05, Mon)	Mobarakinejad, Ali	1084 (C01, Tue)
McGlamery, Devin	1137 (C02, Wed)	Miao, Jinshui	1543 (H04, Mon)	Mochizuki, Dai	2227 (L02, Thu)
McGlon, John	1186 (D02, Mon)	Michel, Carlos	1430 (H01, Tue)	Mock, Michael	2005 (I07, Mon)
McGlynn, Jessica	1706 (I03, Thu)	Michel, Sébastien	1219 (E01, Wed)	Modestino, Miguel	1821 (I05, Sun)
McGordon, Andrew	123 (A01, Tue), 517 (A03, Wed)	Michel, Thierry	750 (B03, Thu)	Modi, Krunal	2036 (K01, Mon)
McGrogan, Frank	1958 (I06, Tue)	Micheltmore, Andrew	2510 (M02, Tue)	Modic, Martina	1175 (D02, Mon)
McKee, William	2322 (L05, Tue)	Michor, Herwig	2396 (L06, Tue)	Modic, Martina	1176 (D02, Mon)
McKinney, Samuel	1734 (I04, Sun)	Micoud, Fabrice	1587 (I01, Wed)	Modreanu, M.	103 (A01, Mon), 1191 (D02, Mon)
McKittrick, Joanna	1168 (D01, Wed)	Miecznikowski, Krzysztof	2302 (L05, Mon), 2341 (L05, Wed)	Moeller, Kevin	2023 (K01, Mon), 2032 (K01, Mon), 2077 (K03, Wed)
McMurray, Jake	1116 (C02, Mon)	Migliorato, Max	2476 (M02, Mon)		
McTurk, Euan	2413 (M01, Tue)	Mihelčić, Mohor	1088 (C01, Wed)		
		Mikael, Solomon	1563 (H04, Wed)		
		Mikhaylik, Yuriy	302 (A03, Mon)		
		Mikkor, Mats	1475 (H02, Tue)		
		Mikos, Allie	2569 (Z01, Tue)		
		Milani, Paolo	2262 (L03, Thu)		
		Miles, Mervyn	1225 (E02, Mon)		

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Moffat, Thomas	1223 (E02, Mon), 1230 (E02, Mon), 1246 (E02, Tue), 1253 (E02, Wed), 1256 (E02, Wed), 1375 (G01, Mon), 2201 (L02, Wed)	Mozet, Kevin	1795 (I04, Wed)	Myung, Jae-ha	2651 (Z03, Wed)
Mogensen, Mogens	1661 (I03, Mon)	Mueller, Karl	298 (A03, Mon), 299 (A03, Mon)	Myung, Nosang	1217 (E01, Wed)
Mohamed, Abdelrhman	2056 (K03, Tue), 2256 (L03, Thu), 2263 (L03, Thu)	Mueller, Thomas	873 (B06, Wed)	Myung, Seung-Taek	330 (A03, Mon), 407 (A03, Tue)
Mohammadi, Mohaddese	131 (A01, Tue)	Muench, Falk	1242 (E02, Tue)	Myung, Sung	865 (B06, Tue)
Mohammed, Omar	2268 (L04, Mon)	Mugo, Samuel	2427 (M01, Wed), 2444 (M01, Wed)		
Mohan Rao, G.	867 (B06, Wed)	Muhamed, Sam	1031 (B09, Sun)	N	
Mohite, Aditya D.	915 (B07, Tue), 2204 (L02, Wed)	Mukerjee, Sanjeev	1608 (I02, Wed), 1702 (I03, Wed), 1710 (I03, Thu), 2212 (L02, Wed)	Na, Hoyoung	366 (A03, Mon)
Mohseni, Madjid	1290 (F01, Tue), 1300 (F01, Tue), 2597 (Z01, Tue)	Mukerjee, Sanjeev	1703 (I03, Wed), 2177 (L02, Tue), 2310 (L05, Tue)	Na, Jihoon	1389 (G01, Tue)
Mohseninia, Arezou	1772 (I04, Tue), 1818 (I04, Thu)	Mukherjee, Partha	251 (A03, Sun), 271 (A03, Sun), 281 (A03, Sun), 343 (A03, Mon), 590 (A03, Thu)	Na, Moonkyong	1436 (H01, Tue), 1439 (H01, Wed)
Moise, Calin	822 (B05, Thu)	Mukherjee, Partha	1342 (F02, Wed)	Na, So-Yeong	1450 (H01, Wed)
Mojica, Martha	801 (B05, Wed)	Mukherjee, Partha	135 (A01, Tue), 352 (A03, Mon), 398 (A03, Tue), 439 (A03, Tue), 1323 (F02, Tue)	Na, Youngseung	1759 (I04, Tue)
Mokhtari, Merwan	1146 (D01, Mon)	Mukherjee, Santanu	331 (A03, Mon), 1079 (C01, Tue)	Naboka, Olga	476 (A03, Wed)
Molina, Daniel	2496 (M02, Tue)	Mukherjee, Shreya	2004 (I07, Mon)	Nag, Angshuman	905 (B07, Tue)
Molina-Romero, Daniel	747 (B03, Thu)	Mukherjee, Soham	146 (A01, Wed)	Nagahara, Larry	2409 (M01, Tue), 2480 (M02, Mon), 2483 (M02, Mon)
Molto, Cécile	1310 (F01, Wed)	Mukherjee, Soham	146 (A01, Wed)	Nagahara, Shingo	2085 (K03, Thu)
Momodou, Damilola	96 (A01, Mon)	Mukundam, Rangachary	199 (A02, Tue), 1591 (I01, Wed), 1796 (I04, Wed), 2007 (I07, Tue), 2008 (I07, Tue), 2012 (I07, Tue)	Nagai, Tomoyuki	2360 (L05, Thu)
Monaghan, Scott	1191 (D02, Mon)	Mulet-Gas, Marc	806 (B05, Wed)	Nagasawa, Kensaku	2047 (K01, Tue)
Monclova, Jose	2241 (L03, Wed)	Mulfinger, George	1368 (G01, Mon)	Nagase, Masaaki	2416 (M01, Tue)
Monconduit, Laure	602 (A03, Thu)	Müller, Christoph	211 (A02, Tue)	Nagashima, Hiroki	912 (B07, Tue)
Monnier, John	1278 (F01, Mon)	Mullner, Peter	2491 (M02, Tue)	Nagata, Noriyuki	1810 (I04, Wed)
Monreal, Marisa	1139 (C02, Wed)	Mundt, Paul	2402 (L06, Mon)	Nagel, Peter	1721 (I04, Sun)
Monroe, Charles	5 (A01, Sun), 1990 (I06, Wed)	Muneta, Iriya	1411 (H01, Mon), 1422 (H01, Tue), 1440 (H01, Wed)	Nageswaran, Gomathi	1428 (H01, Tue)
Monshi, Md.	2477 (M02, Mon)	Münnix, Jens	250 (A03, Sun)	Nagle, Lorraine	1208 (E01, Wed)
Monson, Todd	2627 (Z02, Wed)	Munoz, Stephen	569 (A03, Thu)	Nagpure, Shrikant	596 (A03, Thu), 604 (A03, Thu)
Monteiro, Mariana	1041 (C01, Mon)	Munteshari, Obaidallah	163 (A01, Wed)	Naguib, Michael	49 (A01, Mon)
Moon, Jeong Hyun	1436 (H01, Tue), 1438 (H01, Wed)	Murakami, Hideyuki	1133 (C02, Tue), 1135 (C02, Tue)	Nahm, Kee Suk	500 (A03, Wed), 523 (A03, Wed)
Moon, Joonhee	1654 (I03, Mon), 1662 (I03, Mon)	Murakoshi, Kei	933 (B07, Wed)	Naidji, Bouzid	1297 (F01, Tue)
Moon, Jun Hyuk	656 (B01, Tue), 1894 (I05, Wed)	Murali, Advait	242 (A02, Thu)	Naidu, Gautam	2421 (M01, Tue)
Moon, Kwang Uk	500 (A03, Wed)	Murata, Yasujiro	809 (B05, Wed)	Naik, Rajesh	2426 (M01, Wed)
Moore, Colin	1771 (I04, Tue), 1829 (I05, Sun)	Murbach, Matthew	1354 (F02, Wed)	Nail, Benjamin	928 (B07, Wed)
Moore, Gary	972 (B08, Sun)	Murillo, Jesse	791 (B05, Wed), 804 (B05, Wed), 817 (B05, Thu)	Nair, Rahul	1763 (I04, Tue), 1764 (I04, Tue)
Moradi Ghadi, Bahar	327 (A03, Mon)	Murkute, Pratik	1068 (C01, Tue)	Nakajo, Arata	1328 (F02, Tue)
Morales, Daniel	106 (A01, Mon)	Murphy, Catherine	1221 (E02, Mon)	Nakamoto, Tatsuichiro	2517 (Z01, Tue)
Morales-Guio, Carlos	1631 (I02, Thu)	Murphy, Ian	513 (A03, Wed), 661 (B01, Tue)	Nakamura, Junji	2317 (L05, Tue)
Moran, Bryan	192 (A02, Tue)	Murphy, Joe	1980 (I06, Wed)	Nakamura, Susumu	2514 (Z01, Tue)
Morawietz, Tobias	1769 (I04, Tue)	Murphy, Joseph	240 (A02, Thu)	Nakamura, Takashi	1957 (I06, Tue)
Morcrette, Mathieu	62 (A01, Mon)	Murray, Thomas	1382 (G01, Tue)	Nakanishi, Shuji	584 (A03, Thu), 2228 (L02, Thu)
More, Karren	1591 (I01, Wed), 1667 (I03, Tue), 1777 (I04, Wed), 2342 (L05, Wed)	Murugavel Shanthi, Pavithra	6 (A01, Sun), 60 (A01, Mon)	Nakano, Anna	1113 (C02, Mon), 1141 (C02, Wed), 1142 (C02, Wed)
Moreau, Philippe	585 (A03, Thu)	Murugesan, Chinnasamy	409 (A03, Tue), 2307 (L05, Mon)	Nakano, Jinichiro	1113 (C02, Mon), 1141 (C02, Wed), 1142 (C02, Wed)
Morelli, Marco	1385 (G01, Tue)	Murugesan, Vijayakumar	298 (A03, Mon)	Nakashima, Naotoshi	638 (B01, Sun), 695 (B03, Tue), 711 (B03, Tue), 718 (B03, Wed)
Moreno-García, Pavel	1259 (E02, Wed)	Murugesan, Vijayakumar	216 (A02, Wed), 243 (A02, Thu), 299 (A03, Mon)	Nakashima, Yuki	650 (B01, Mon)
Moreno-Hernandez, Ivan	2135 (L01, Wed)	Murugesan, Vijayakumar	207 (A02, Tue), 239 (A02, Thu)	Nakayama, Kaiti	2083 (K03, Thu)
Moreno-Vicente, Antonio	806 (B05, Wed)	Mustain, William	57 (A01, Mon), 618 (A04, Mon), 1603 (I02, Wed), 1754 (I04, Tue)	Nalaskowski, Jakub	1382 (G01, Tue)
Morgan, Dane	1941 (I06, Mon)	Muthinti, Raja	1370 (G01, Mon)	Nale, Angeloclaudio	2334 (L05, Wed)
Mori, Carlos	1460 (H02, Mon)	Muthukumar, Sriram	2439 (M01, Wed)	Nam, Ki Tae	1654 (I03, Mon)
Mori, Yoshiharu	2625 (Z02, Wed)	Muthukumar, Sriram	1491 (H03, Mon), 2440 (M01, Wed), 2448 (M01, Wed)	Nam, Sang Yong	2576 (Z01, Tue), 2577 (Z01, Tue), 2636 (Z02, Wed)
Morimoto, Yu	1581 (I01, Wed), 1669 (I03, Tue), 2165 (L02, Mon)	Muthuraj, Divyamahalakshmi	490 (A03, Wed)	Nam, Seongsik	1896 (I05, Wed)
Morin, Pierrick	10 (A01, Sun)	Muto, Marika	1685 (I03, Wed)	Nambo, Apolo	951 (B07, Thu)
Morisaki, Yasuhiro	938 (B07, Wed)	Muzaffar, Tasleem	1364 (F02, Thu), 1590 (I01, Wed)	Nanaji, Katchala	320 (A03, Mon)
Morita, Touru	1770 (I04, Tue)	Myers, Deborah	1586 (I01, Wed), 1591 (I01, Wed), 1717 (I04, Sun), 1794 (I04, Wed), 2319 (L05, Tue), 2332 (L05, Wed)	Nanayakkara, Sanjini	853 (B06, Tue)
Moritomo, Yutaka	24 (A01, Mon), 28 (A01, Mon)	Myers, Morgan	1560 (H04, Tue)	Nanba, Masakazu	1470 (H02, Tue)
Morrall, John	1113 (C02, Mon)	Myles, Timothy	2282 (L04, Mon)	Nanda, Jagjit	49 (A01, Mon), 106 (A01, Mon), 2629 (Z02, Wed)
Morris, Larry	119 (A01, Tue), 127 (A01, Tue)			Nandjou, Fredy	1823 (I05, Sun)
Morstein, Carina	1231 (E02, Tue)			Nanko, Makoto	1112 (C02, Mon)
Mortimer, Nicholas	224 (A02, Wed)			Narayanan, S. R.	1691 (I03, Wed), 242 (A02, Thu)
Moselund, Kirsten	1381 (G01, Tue)			Nardeli, Jéssica	2565 (Z01, Tue), 2579 (Z01, Tue)
Moser, Christophe	1821 (I05, Sun)			Nardis, Sara	997 (B08, Mon)
Moss, Jared	220 (A02, Wed)			Naruta, Yoshinori	964 (B08, Sun)
Moss, Pedro	119 (A01, Tue)			Nascimento, Rafaella	677 (B02, Mon)
Mosselmans, Fred	1042 (C01, Mon)			Nash, Jared	2006 (I07, Mon)
Mostafa, Ehab	2331 (L05, Wed)			Nasr Esfahani, Ehsan	1938 (I06, Mon), 1939 (I06, Mon)
Moth-Poulsen, Kasper	742 (B03, Thu)			Nasreen, Shamima	29 (A01, Mon)
Motylnski, Konrad	1307 (F01, Tue)			Nassar, Joanna	1574 (H04, Wed)
Moulin, Johan	2486 (M02, Mon)			Nath, Manashi	1635 (I02, Thu)
Mourouvin, Rayane	1308 (F01, Tue)			Nath, Manashi	1635 (I02, Thu)
Moutarlier, Virginie	1261 (E02, Wed)			Nath, Manashi	1674 (I03, Tue)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Nath, Narayan Chandra	1881 (I05, Wed)	Nicolini, Ariana	2426 (M01, Wed)	Nyce, Michael	53 (A01, Mon), 115 (A01, Mon), 2572 (Z01, Tue)
Nation, Leah	1940 (I06, Mon)	Nie, Mengsi	790 (B05, Tue)	Nyholm, Leif	392 (A03, Tue)
Natu, Rucha	1031 (B09, Sun)	Nie, Qi	1618 (I02, Wed)	Nyholm, Leif	1205 (E01, Wed)
Naumov, Anton	669 (B02, Sun), 681 (B02, Mon), 693 (B02, Tue), 694 (B02, Tue)	Nie, Zimin	207 (A02, Tue), 216 (A02, Wed), 239 (A02, Thu), 241 (A02, Thu), 243 (A02, Thu)	Nyhus, Mary	198 (A02, Tue)
Naumovich, Yevgeniy	1307 (F01, Tue)	Nieh, Simon	325 (A03, Mon)	Nyokong, Tebello	962 (B08, Sun)
Nava, Giorgio	419 (A03, Tue)	Niehoff, Philip	359 (A03, Mon)	Nzone Fomena, Nadège	1700 (I03, Wed)
Navabzadeh Esmaeely, Saba	1060 (C01, Tue)	Nielander, Adam	1895 (I05, Wed), 2010 (I07, Tue)		
Navaei, Milad	629 (B01, Sun), 2017 (I07, Tue)	Nightingale, Michael	1287 (F01, Tue)	O	
Navarro, Carlos	1474 (H02, Tue)	Nikiforov, Anton	1176 (D02, Mon)	O'Brien, Richard	1316 (F01, Wed)
Navarro, Santiago	1474 (H02, Tue)	Nikitina, Victoria	2318 (L05, Tue)	O'Brien, S.	103 (A01, Mon), 1191 (D02, Mon)
Nawn, Graeme	1758 (I04, Tue)	Nikpour, Mojdeh	268 (A03, Sun)	O'Neil, Glen	2490 (M02, Tue)
Nayak, Shanti	2007 (I07, Tue), 2012 (I07, Tue)	Ning, Fei	1061 (C01, Tue)	Obata, Oluwatosin	2260 (L03, Thu)
Nayfeh, Ammar	1373 (G01, Mon)	Ninlachart, Jakraphan	1046 (C01, Mon)	Oboroceanu, Daniela	197 (A02, Tue)
Naylor, Andy	421 (A03, Tue)	Nirmalchandar, Archith	242 (A02, Thu)	Obrovac, M.	393 (A03, Tue)
Nayoze-Coynel, Christine	1587 (I01, Wed)	Nishi, Hiroyasu	931 (B07, Tue)	Oda, Tomohiko	1094 (C01, Wed)
Nazaretski, Evgeny	1077 (C01, Tue)	Nishida, Tetsuo	1237 (E02, Tue)	Odgaard, Madeleine	1734 (I04, Sun)
Nazarov, A.	1149 (D01, Mon)	Nishihara, Katsuhiro	1096 (C01, Wed)	Odum, Susan	228 (A02, Wed)
Nazarov, Alexei	1464 (H02, Mon)	Nishikata, Atsushi	1056 (C01, Tue), 1058 (C01, Tue), 1059 (C01, Tue)	Ogawa, Akiko	668 (B02, Sun), 2027 (K01, Mon)
Nazarova, Tamara	1464 (H02, Mon)	Nishikawa, Daisuke	435 (A03, Tue)	Ogawa, Takuji	971 (B08, Sun)
Nazemi, Zahra	2081 (K03, Thu)	Nishikawa, Kakeru	635 (B01, Sun)	Oginni, Oluwatosin	158 (A01, Wed)
Nazmutdinov, Renat	2318 (L05, Tue)	Nishikawa, Kei	1237 (E02, Tue)	Ogino, Sayaka	1004 (B08, Tue)
Neal, Christopher	198 (A02, Tue)	Nishimura, Takuya	100 (A01, Mon)	Ogitsu, Tadashi	1646 (I03, Mon), 1855 (I05, Tue), 1898 (I05, Thu)
Nealey, Paul	1762 (I04, Tue), 2295 (L04, Tue)	Nishitani, Shoichi	1484 (H03, Mon)	Ogoshi, Tomoki	2025 (K01, Tue)
Nealley, William	1141 (C02, Wed), 1142 (C02, Wed)	Nishiyama, Hiroki	2025 (K01, Mon), 2028 (K01, Mon)	Ogura, Atsushi	837 (B06, Tue)
Neely, Jason	1413 (H01, Tue)	Nitopi, Stephanie	1631 (I02, Thu)	Ogura, Kazuya	944 (B07, Thu)
Negishi, Akira	194 (A02, Tue)	Nitta, Akio	2144 (L01, Wed)	Oh, Hyo Chan	69 (A01, Mon)
Negro, Enrico	1758 (I04, Tue), 2289 (L04, Tue), 2302 (L05, Mon), 2334 (L05, Wed), 2341 (L05, Wed)	Nitta, Kyotaro	1204 (E01, Tue)	Oh, Hyo-Jun	777 (B04, Tue), 1182 (D02, Mon)
Nehate, Shradhdha	2638 (Z03, Wed)	Niu, Chaojiang	315 (A03, Mon), 587 (A03, Thu)	Oh, Hyukkeun	458 (A03, Wed)
Neira, Karinna	2187 (L02, Tue)	Niu, Junjie	340 (A03, Mon)	Oh, Jong-Gil	1776 (I04, Wed)
Nelayah, Jaysen	1783 (I04, Wed)	Niwa, Etsuko	1724 (I04, Sun), 2587 (Z01, Tue)	Oh, Kyungbae	294 (A03, Mon)
Nellist, Michael	1904 (I05, Thu)	Niwa, Hideharu	24 (A01, Mon)	Oh, Sae-Joong	1518 (H03, Wed)
Nelson, George	352 (A03, Mon), 439 (A03, Tue)	Njoku, Demian	1092 (C01, Wed)	Oh, Seongkook	862 (B06, Tue), 1807 (I04, Wed)
Nelson, Jocienne	1782 (I04, Wed)	Nkosi, Funeka	254 (A03, Sun), 287 (A03, Mon)	Oh, Seung Yun	82 (A01, Mon)
Nemani, Venkat	196 (A02, Tue)	Noble, David	134 (A01, Tue), 135 (A01, Tue), 173 (A01, Thu)	Oh, Si Hyoung	552 (A03, Wed)
Nemykin, Victor	990 (B08, Mon)	Nocera, Daniel	960 (B08, Sun), 969 (B08, Sun)	Oh, Song I	1785 (I04, Wed)
Nenoff, Tina	2471 (M01, Thu)	Nock, Volker	1320 (F01, Wed)	Oh, Sun Woo	1437 (H01, Tue)
Nepomnaschy, Pablo	2503 (M02, Tue)	Noel, Nakita	643 (B01, Mon)	Oh, Tae-Sik	943 (B07, Thu)
Neri, Giovanni	2469 (M01, Thu)	Noguchi, Hidenori	946 (B07, Thu), 2189 (L02, Tue)	Ohashi, Takumi	837 (B06, Tue)
Nesaei, Sepehr	2482 (M02, Mon)	Nogueira, Francisco	1306 (F01, Tue)	Ohigashi, Yuya	941 (B07, Wed)
Nesic, Srdjan	1060 (C01, Tue), 1065 (C01, Tue)	Noh, Chanwoo	2155 (L01, Wed)	Ohira, Akihiro	194 (A02, Tue)
Neufeind, Joerg	446 (A03, Wed)	Noh, Jae-Kyo	442 (A03, Wed)	Ohira, Akihiro	1802 (I04, Wed)
Newblom, Gregory	2373 (L06, Mon)	Noh, Jinhyun	1418 (H01, Tue)	Ohki, Shota	1052 (C01, Mon)
Neyerlin, Kenneth	1743 (I04, Mon), 1794 (I04, Wed), 2319 (L05, Tue)	Nohira, Toshiyuki	1313 (F01, Wed)	Ohkubo, Kei	2067 (K03, Wed)
Ng, Kai Ling	1784 (I04, Wed)	Nolan, Clifford	2395 (L06, Tue)	Ohodnicki, Paul	2412 (M01, Tue), 2422 (M01, Tue)
Ng, Kok Long	344 (A03, Mon)	Noll, Dennis	900 (B06, Thu)	Ohsaka, Takeo	2512 (Z01, Tue), 2513 (Z01, Tue)
Ng, Tse Nga	1538 (H04, Mon)	Nolte, Roeland	1006 (B08, Tue)	Ohtani, Bunsho	935 (B07, Wed), 1879 (I05, Wed), 2144 (L01, Wed)
Ng, Yun Hau	1889 (I05, Wed)	Nomura, Fumihiro	2513 (Z01, Tue)	Ohuchi, Satoru	484 (A03, Wed)
Ngaboyamahina, Edgard	1308 (F01, Tue), 2091 (K03, Thu)	Nonemacher, Juliane	480 (A03, Wed)	Oikawa, Shunpei	933 (B07, Wed)
Ngan, Aldrich	161 (A01, Wed)	Nonnenmann, Stephen	1931 (I06, Mon)	Oishi, Shuji	1913 (I05, Thu)
Ngene, Peter	2377 (L06, Mon)	Nonoguchi, Yoshiyuki	649 (B01, Mon)	Oishi, Tetsuo	1313 (F01, Tue)
Nguon, Helen	618 (A04, Mon)	Norkus, Eugenijus	1268 (E02, Wed), 1787 (I04, Wed)	Oizumi, Atsuya	2027 (K01, Mon)
Nguyen, Bichlien	2023 (K01, Mon)	Nerskov, Jens	1602 (I02, Wed), 1605 (I02, Wed), 1632 (I02, Thu), 1689 (I03, Wed), 2010 (I07, Tue), 2297 (L05, Mon), 2344 (L05, Wed)	Oka, Soichi	1052 (C01, Mon)
Nguyen, Cao	555 (A03, Wed)	Northrop, Paul	1353 (F02, Wed)	Okada, Hiroshi	802 (B05, Wed)
Nguyen, Christiane	618 (A04, Mon)	Norton, M. Grant	2647 (Z03, Wed)	Okada, Yasuaki	1329 (F02, Tue)
Nguyen, Hanh	438 (A03, Tue)	Norville, Casey	2408 (M01, Tue)	Okada, Yohei	2062 (K03, Wed), 2085 (K03, Thu)
Nguyen, Hoang	2654 (Z03, Wed)	Nour, Maha	1574 (H04, Wed)	Okada, Yohei	2049 (K01, Tue), 2083 (K03, Thu)
Nguyen, Nguyen	2654 (Z03, Wed)	Nouri-Khorasani, Amin	1365 (F02, Thu), 1666 (I03, Tue), 2597 (Z01, Tue)	Okamoto, Kazuhiro	2043 (K01, Tue)
Nguyen, Son	1371 (G01, Mon)	Novak, Steven	1382 (G01, Tue)	Okamoto, Tatsuki	1050 (C01, Mon)
Nguyen, Thi Hien Thuy	1003 (B08, Tue)	Novitskaya, Ekaterina	1168 (D01, Wed)	Okazaki, Toshiya	825 (B05, Thu)
Nguyen, Thuan	1104 (C02, Mon)	Novitski, David	1583 (I01, Wed)	Okholin, Pavel	1464 (H02, Mon)
Nguyen, Trung	185 (A02, Tue), 218 (A02, Wed)	Noyhouzer, Tomer	2117 (L01, Tue)	Okoli, Celest	2174 (L02, Mon)
Nguyen Van Nhien, Albert	2146 (L01, Wed)	Ntagia, Eleftheria	1299 (F01, Tue)	Oktyabrsky, Serge	1405 (H01, Mon)
Nguyenvan, Chuc	750 (B03, Thu)	Nuckolls, Colin	660 (B01, Tue)	Okujima, Tetsuo	979 (B08, Sun)
Ni, Chung-Ta	33 (A01, Mon)	Nurhayati, Nunik	971 (B08, Sun)	Okumura, Toyoki	380 (A03, Tue)
Ni Eidhin, Deirdre	197 (A02, Tue)	Nwabara, Uzoma	1630 (I02, Thu)	Okuno, Hanako	843 (B06, Tue)
Nicholas, Jason	1940 (I06, Mon), 1942 (I06, Mon)			Olaya, Astrid	2065 (K03, Wed)
Nicholas, Robin	643 (B01, Mon)			Oldani, Claudio	1769 (I04, Tue)
Nichols, Richard	985 (B08, Mon), 2275 (L04, Mon)			Oldham, Christopher	1087 (C01, Wed)
Nichols, Richard	2182 (L02, Tue)			Oleksak, Richard	1105 (C02, Mon), 1106 (C02, Mon)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Oliveira, Aloadir.....	1080 (C01, Tue), 1098 (C01, Wed)	Padmanabhan, Vivek.....	2182 (L02, Tue)	Park, Heun.....	82 (A01, Mon)
Oliveira, Luiz.....	1714 (I03, Thu)	Paek, Eunsu.....	406 (A03, Tue)	Park, Ho Seok.....	150 (A01, Wed), 538 (A03, Wed), 759 (B04, Mon), 773 (B04, Tue), 780 (B04, Tue), 1559 (H04, Tue), 2536 (Z01, Tue), 2552 (Z01, Tue)
Olmstead, Marilyn.....	803 (B05, Wed)	Paesani, Francesco.....	2291 (L04, Tue)	Park, Hongjun.....	623 (B01, Sun)
Olson, Jarred.....	249 (A03, Sun)	Pagel, Mark.....	690 (B02, Tue)	Park, Hyeokjun.....	294 (A03, Mon), 580 (A03, Thu)
Olson, Stephen.....	1382 (G01, Tue)	Pagot, Gioele.....	2289 (L04, Tue), 2334 (L05, Wed)	Park, Hyeong-Il.....	564 (A03, Wed)
Olu, Pierre-Yves.....	2227 (L02, Thu)	Paik, Hanjong.....	1782 (I04, Wed), 2211 (L02, Wed)	Park, Hyosoek.....	500 (A03, Wed)
Omasta, Travis.....	57 (A01, Mon), 1754 (I04, Tue)	Paillard, Vincent.....	1165 (D01, Wed)	Park, Hyun-Seo.....	1812 (I04, Wed)
Omasta, Travis.....	1603 (I02, Wed)	Pailleret, Alain.....	2466 (M01, Thu)	Park, Hyunwoong.....	1834 (I05, Sun), 1881 (I05, Wed), 1915 (I05, Thu)
Omenya, Fredrick.....	531 (A03, Wed)	Paillet, Matthieu.....	750 (B03, Thu)	Park, Inchul.....	1682 (I03, Tue)
Omosemi, A.....	1289 (F01, Tue), 2354 (L05, Thu)	Paiste, Päärn.....	1723 (I04, Sun), 2308 (L05, Mon)	Park, Jaehyun.....	1717 (I04, Sun), 1794 (I04, Wed)
Omura, Yasuhisa.....	1458 (H02, Mon)	Pak, Chanho.....	763 (B04, Mon), 1804 (I04, Wed)	Park, Jea-Gun.....	1144 (D01, Mon)
On, Shyue Ping.....	1168 (D01, Wed)	Pakira, Victor.....	1030 (B09, Sun)	Park, Jehee.....	1285 (F01, Tue)
Onitsuka, Hisashi.....	711 (B03, Tue)	Pal, Arpan.....	2062 (K03, Wed)	Park, Jeong Hee.....	1559 (H04, Tue), 2552 (Z01, Tue)
Ono, Hideki.....	1313 (F01, Wed)	Pal, Uday.....	1936 (I06, Mon)	Park, Jeong-Gue.....	1285 (F01, Tue)
Onori, Simona.....	1351 (F02, Wed)	Pala, Raj.....	65 (A01, Mon), 1273 (F01, Mon), 1454 (H01, Wed), 1688 (I03, Wed), 2237 (L02, Thu)	Park, Jeonghee.....	2536 (Z01, Tue)
Onuma, Takamitsu.....	100 (A01, Mon)	Palaniyandy, Nithyadharseni.....	254 (A03, Sun), 287 (A03, Mon)	Park, Jinhong.....	1563 (H04, Wed)
Oohora, Koji.....	1012 (B08, Tue)	Pallares, Josep.....	1523 (H03, Wed), 2397 (L06, Tue), 2499 (M02, Tue)	Park, Jeung Hun.....	137 (A01, Tue)
Ooi, Azusa.....	1056 (C01, Tue), 1058 (C01, Tue), 1059 (C01, Tue)	Palma, Matteo.....	734 (B03, Wed), 742 (B03, Thu)	Park, Ji Hoon.....	2624 (Z02, Wed)
Opila, E.....	1109 (C02, Mon)	Palmisano, Giovanni.....	1876 (I05, Wed)	Park, Jin-Hong.....	852 (B06, Tue)
Opila, Elizabeth.....	1110 (C02, Mon)	Pan, Anqiang.....	2613 (Z01, Tue)	Park, Jinho.....	629 (B01, Sun), 2017 (I07, Tue), 2197 (L02, Wed)
Orangi, Jafar.....	157 (A01, Wed)	Pan, Caofeng.....	1447 (H01, Wed)	Park, Jinkyu.....	91 (A01, Mon)
Orazem, Mark.....	1288 (F01, Tue)	Pan, Deng.....	2425 (M01, Wed)	Park, Jiwoong.....	889 (B06, Thu)
Orazov, Marat.....	1631 (I02, Thu), 1720 (I04, Sun)	Pan, Fu.....	2455 (M01, Wed), 2463 (M01, Thu)	Park, Jong Hyeok.....	781 (B04, Tue), 783 (B04, Tue), 785 (B04, Tue), 1892 (I05, Wed)
Orcin-Chaix, Lucile.....	716 (B03, Wed)	Pan, Fu-Ming.....	1434 (H01, Tue), 1435 (H01, Tue)	Park, Jonghyun.....	274 (A03, Sun)
Orellana, Walter.....	2187 (L02, Tue)	Pan, Huilin.....	297 (A03, Mon)	Park, Joonam.....	91 (A01, Mon), 598 (A03, Thu)
Orendorff, Christopher.....	122 (A01, Tue)	Pan, Ke.....	46 (A01, Mon)	Park, Juhong.....	863 (B06, Tue)
Orfino, Francesco.....	1962 (I06, Tue)	Pan, Menghsuan.....	225 (A02, Wed)	Park, Jun-Young.....	2533 (Z01, Tue), 2534 (Z01, Tue), 2535 (Z01, Tue), 2608 (Z01, Tue)
Orlowski, Marius.....	1476 (H02, Tue)	Pan, Pin-Chun.....	2468 (M01, Thu)	Park, JungHwa.....	1761 (I04, Tue)
Orme, Christine.....	1211 (E01, Wed), 1445 (H01, Wed)	Pan, Shanlin.....	2127 (L01, Tue)	Park, Ka-Young.....	2533 (Z01, Tue)
Ortiz Vitoriano, Nagore.....	579 (A03, Thu)	Pan, Shu-Yuan.....	1283 (F01, Tue)	Park, Kang-Joon.....	313 (A03, Mon)
Ortiz-Santiago, Joed.....	2138 (L01, Wed)	Pan, Tung.....	2462 (M01, Thu), 2508 (M02, Tue), 2637 (Z03, Wed)	Park, Kyoungwoo.....	1388 (G01, Tue)
Osaka, Itaru.....	912 (B07, Tue)	Pan, Xiaoqing.....	1931 (I06, Mon)	Park, Kyu-Young.....	294 (A03, Mon)
Osborn, Kevin.....	1382 (G01, Tue)	Pan, Yung-Tin.....	1719 (I04, Sun), 2342 (L05, Wed)	Park, MiSeok.....	1266 (E02, Wed)
Oshiba, Yuhei.....	1775 (I04, Wed)	Pande, Vikram.....	1281 (F01, Mon)	Park, Moon.....	1798 (I04, Wed)
Oshikiri, Tomoya.....	925 (B07, Wed), 1869 (I05, Tue)	Pandey, Amit.....	1121 (C02, Tue)	Park, Moon Gyu.....	1716 (I03, Thu)
Osiceanu, P.....	103 (A01, Mon)	Pandey, Gaind.....	90 (A01, Mon)	Park, Myoung Jin.....	1518 (H03, Wed)
Osmieri, Luigi.....	2319 (L05, Tue)	Pandey, K. K.....	876 (B06, Wed)	Park, Myungsoo.....	2548 (Z01, Tue), 2551 (Z01, Tue)
Ossorio, Oscar.....	1465 (H02, Mon), 1475 (H02, Tue)	Pandey, Monish.....	1912 (I05, Thu)	Park, Sam.....	881 (B06, Wed), 901 (B06, Thu), 953 (B07, Thu)
Osterloh, Frank.....	928 (B07, Wed), 1860 (I05, Tue)	Pandhi, Twinkle.....	1578 (H04, Wed)	Park, Sang Jun.....	491 (A03, Wed), 545 (A03, Wed)
Oswald, Stefan.....	2567 (Z01, Tue)	Pandres, Elena.....	249 (A03, Sun), 396 (A03, Tue)	Park, Sang Mok.....	351 (A03, Mon)
Otsuka, Keigo.....	702 (B03, Tue)	Pang, Qin.....	1099 (C01, Wed), 1100 (C01, Wed)	Park, Sang-Hee.....	1376 (G01, Mon), 1388 (G01, Tue)
Ou, Keng-Liang.....	1972 (I06, Tue)	Panigrahi, Asisa.....	2582 (Z01, Tue)	Park, Sang-Min.....	525 (A03, Wed)
Ou Yang, Liang Yueh.....	1253 (E02, Wed)	Pannala, Sravan.....	368 (A03, Mon)	Park, Sehkyu.....	1969 (I06, Tue)
Ouimet, Ryan.....	2282 (L04, Mon), 2449 (M01, Wed)	Pant, Kapil.....	2245 (L03, Wed), 2251 (L03, Wed)	Park, Seok-Hee.....	2169 (L02, Mon)
Oukassi, Sami.....	1214 (E01, Wed)	Pant, Lalit.....	1752 (I04, Tue)	Park, Seong-Ryong.....	2651 (Z03, Wed)
Ouyang, Jianyong.....	1026 (B09, Sun), 1558 (H04, Tue)	Pant, Pradeep.....	1488 (H03, Mon)	Park, Seung Hark.....	2553 (Z01, Tue)
Ouyang, Mengzheng.....	2143 (L01, Wed)	Pantisano, Luigi.....	1463 (H02, Mon)	Park, Somin.....	917 (B07, Tue)
Ovens, Jeffrey.....	375 (A03, Tue)	Paolesse, Roberto.....	993 (B08, Mon), 997 (B08, Mon)	Park, Soojin.....	547 (A03, Wed)
Owhoso, Fiki.....	2571 (Z01, Tue)	Paolucci, Francesco.....	813 (B05, Wed), 854 (B06, Tue), 2084 (K03, Thu)	Park, Su-Ryeon.....	1303 (F01, Tue)
Owrutsky, Jeffrey.....	1871 (I05, Tue)	Papa Rao, Satyavolu.....	1382 (G01, Tue)	Park, Sung.....	2546 (Z01, Tue)
Owrutsky, Jeffrey.....	1633 (I02, Thu)	Papacchini, Maddalena.....	2258 (L03, Thu)	Park, Sungwon.....	406 (A03, Tue)
Oyama, Yutaka.....	1096 (C01, Wed)	Papadantonakis, Kimberly.....	1923 (I05, Thu), 2135 (L01, Wed)	Park, Sungwook.....	1490 (H03, Mon)
Oyedotun, Kabir.....	96 (A01, Mon)	Papandrew, Alexander.....	2631 (Z02, Wed)	Park, Wan Woo.....	1376 (G01, Mon)
Ozaki, Atsushi.....	2049 (K01, Tue), 2062 (K03, Wed)	Parab, Virendra.....	1565 (H04, Wed)	Park, Yoo Sei.....	1679 (I03, Tue), 1692 (I03, Wed), 1704 (I03, Wed)
Ozbek, Merve.....	1463 (H02, Mon)	Paramel, Mathew.....	2062 (K03, Wed)	Parke, Caitlin.....	1331 (F02, Tue), 1357 (F02, Wed)
Ozden, Sehmsu.....	915 (B07, Tue), 2204 (L02, Wed)	Parameswaran, Ash.....	2503 (M02, Tue)	Parker, Charles.....	1308 (F01, Tue)
Ozer, Lutfiye.....	1876 (I05, Wed)	Paris, Jean.....	1271 (F01, Mon)	Parker, Joseph.....	1235 (E02, Tue)
Ozkan, Umit.....	634 (B01, Sun)	Park, Chan Hyung.....	862 (B06, Tue)	Parker, Nia.....	2008 (I07, Tue), 2598 (Z01, Tue)
Ozmen, Ozcan.....	1791 (I04, Wed)	Park, Chan-Gyung.....	412 (A03, Tue), 1910 (I05, Thu), 1911 (I05, Thu)	Parkinson, Bruce.....	2370 (L06, Mon)
Ozoemena, Kenneth.....	254 (A03, Sun), 287 (A03, Mon)	Park, Chanro.....	1371 (G01, Mon)	Parlinska-Wojtan, Magdalena.....	2218 (L02, Thu), 2220 (L02, Thu)
Ozouf, Guillaume.....	1668 (I03, Tue)	Park, Cheolmin.....	1507 (H03, Tue), 2562 (Z01, Tue), 2593 (Z01, Tue)	Parr, Daniel.....	2339 (L05, Wed), 2511 (Z01, Tue)
		Park, Chi Hoon.....	2636 (Z02, Wed)	Parra, Roberto.....	1033 (B09, Sun)
		Park, Eun Joo.....	199 (A02, Tue), 1753 (I04, Tue)		
		Park, Eunjun.....	563 (A03, Wed)		
		Park, Gu-Gon.....	1746 (I04, Mon), 2169 (L02, Mon)		
		Park, Haesun.....	304 (A03, Mon), 2270 (L04, Mon)		

P

Pace, Giuseppe.....	1758 (I04, Tue), 2289 (L04, Tue), 2334 (L05, Wed)
Pachimatla, Rajesh.....	1360 (F02, Thu), 2115 (L01, Tue)
Packirisamy, M.....	2441 (M01, Wed)
Pacquelet, Sandrine.....	977 (B08, Sun)
Padalkar, Sonal.....	2424 (M01, Wed)
Padash, Fardin.....	1319 (F01, Wed)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Parra Puerto, Andres	1784 (I04, Wed), 1789 (I04, Wed)	Pereira, Ernesto	1080 (C01, Tue), 1098 (C01, Wed)	Poelt, Peter	1161 (D01, Tue), 2394 (L06, Tue), 2396 (L06, Tue)
Parra-Puerto, Andres	1820 (I05, Sun)	Pereira Silva Neves, Marta Maria	2456 (M01, Wed)	Pohl, Jakob	1008 (B08, Tue)
Parret, Romain	750 (B03, Thu)	Peres, Riberto	1309 (F01, Tue)	Poirier, Jean-Sébastien	1219 (E01, Wed)
Parrondo, Javier	1672 (I03, Tue), 1786 (I04, Wed), 2132 (L01, Tue), 2358 (L05, Thu)	Perez, Emilio	715 (B03, Wed), 855 (B06, Tue)	Pol, Laura	2397 (L06, Tue)
Parsa, Yohan	1118 (C02, Tue)	Perez Page, Maria	1764 (I04, Tue)	Pol, Vilas	474 (A03, Wed), 1342 (F02, Wed)
Parsons, Gregory	1087 (C01, Wed)	Perez-Beltran, Saul	277 (A03, Sun)	Poletayev, Andrey	231 (A02, Wed)
Parvis, Marco	1048 (C01, Mon)	Perez-page, Maria	1763 (I04, Tue), 1788 (I04, Wed)	Polizzi, Stefano	2334 (L05, Wed)
Pasalic, Jasmina	283 (A03, Sun)	Perini, Chris	629 (B01, Sun)	Pollack, Daniel	22 (A01, Sun)
Pascual, Laura	2066 (K03, Wed)	Perrier, Michel	1271 (F01, Mon)	Pollard, Travis	2286 (L04, Tue)
Pasebani, Somayah	1068 (C01, Tue)	Perrin, Jean-Christophe	1795 (I04, Wed)	Polo, Elena	678 (B02, Mon)
Passar, Guillaume	960 (B08, Sun)	Perrin-Sarazin, Florence	476 (A03, Wed)	Polzin, Bryant	253 (A03, Sun), 464 (A03, Wed)
Passarello, Donata	429 (A03, Tue)	Perry, Nicola	1933 (I06, Mon), 1934 (I06, Mon), 1944 (I06, Mon), 2321 (L05, Tue), 2359 (L05, Thu), 2591 (Z01, Tue)	Pomerantseva, Ekaterina	114 (A01, Mon), 333 (A03, Mon), 452 (A03, Wed), 2581 (Z01, Tue)
Passerini, Stefano	129 (A01, Tue), 371 (A03, Tue)	Persson, Kristin	262 (A03, Sun), 263 (A03, Sun)	Pomeroy, James	1416 (H01, Tue)
Pastushkin, Timothy	47 (A01, Mon), 2423 (M01, Tue)	Petek, Tyler	240 (A02, Thu)	Ponce Gonzalez, Julia	1748 (I04, Mon)
Patard, Olivier	1412 (H01, Mon)	Peters, Dennis	2031 (K01, Mon), 2045 (K01, Tue)	Poozhikunnath, Abhinav	1728 (I04, Sun), 2323 (L05, Tue), 2355 (L05, Thu)
Patel, Anish	1978 (I06, Tue)	Peters, Lisanne	846 (B06, Tue)	Pope, Michael	830 (B06, Mon), 2392 (L06, Tue), 2604 (Z01, Tue), 2610 (Z01, Tue)
Patel, Mumukshu	539 (A03, Wed)	Peterson, David	1646 (I03, Mon)	Popov, Alexey	814 (B05, Thu), 815 (B05, Thu), 818 (B05, Thu)
Patel, Prasad	1640 (I03, Mon)	Petibon, Remi	454 (A03, Wed)	Popov, Branko	2192 (L02, Tue)
Patel, Rajankumar	374 (A03, Tue)	Petracca, Paul	618 (A04, Mon)	Popov, Ivan	229 (A02, Wed)
Patel, Robin	2056 (K03, Tue)	Petrash, Stan	1077 (C01, Tue)	Popov, Valentin	750 (B03, Thu)
Patel, Shrayesh	1762 (I04, Tue), 2295 (L04, Tue)	Petrikov, Sergey	2078 (K03, Wed), 2079 (K03, Wed)	Porfyrikis, Kyriakos	793 (B05, Wed), 827 (B05, Thu), 985 (B08, Mon)
Patel, Vinay	2418 (M01, Tue)	Petrova, Victoria	367 (A03, Mon)	Porter, Alexandra	1042 (C01, Mon)
Pathak, Chintan	165 (A01, Thu), 1340 (F02, Tue), 1354 (F02, Wed)	Petrovska, Milena	1176 (D02, Mon)	Porter, Matthew	1406 (H01, Mon)
Pathak, Dinesh	1248 (E02, Tue)	Pettersson, Jean	392 (A03, Tue)	Porter, Spencer	1903 (I05, Thu)
Pathak, Manan	165 (A01, Thu), 1331 (F02, Tue), 1350 (F02, Wed), 1354 (F02, Wed)	Petzold, Albrecht	652 (B01, Tue)	Porthault, Hélène	1214 (E01, Wed)
Pathak, Pravin	1007 (B08, Tue)	Peurifoy, Samuel	660 (B01, Tue)	Portier, Xavier	1156 (D01, Tue)
Patil, Kailash	1693 (I03, Wed)	Peuvot, Kevin	1986 (I06, Wed)	Pouget, Stéphanie	248 (A03, Sun)
Patil, Satish	221 (A02, Wed)	Pfanschilling, Felix	222 (A02, Wed)	Pounds, Tyler	2345 (L05, Wed)
Patil, Sunil	1488 (H03, Mon)	Pham, David	2591 (Z01, Tue)	Pouraghajan, Fezzeh	247 (A03, Sun)
Patolsky, Fernando	561 (A03, Wed)	Pham, Hieu	378 (A03, Tue), 553 (A03, Wed)	Pourtois, Geoffrey	842 (B06, Tue)
Patrissi, Charles	76 (A01, Mon)	Pham, Tammy	2033 (K01, Mon), 2583 (Z01, Tue)	Povey, Ian	103 (A01, Mon), 1191 (D02, Mon)
Patterson, Jenna	1040 (B09, Tue)	Pham, Tuan	622 (B01, Sun), 1284 (F01, Tue), 1898 (I05, Thu)	Powell, Lyndsey	717 (B03, Wed)
Paul, Michael	1673 (I03, Tue), 2375 (L06, Mon)	Pharoah, Jon	181 (A02, Tue)	Power, Aoife	2438 (M01, Wed)
Paul, Nirupam	2582 (Z01, Tue)	Pharr, Matt	1573 (H04, Wed)	Powers, Xian	803 (B05, Wed)
Pauwels, Danny	1274 (F01, Mon)	Phattharasupakun, Nutthaphon	621 (B01, Sun), 655 (B01, Tue), 1650 (I03, Mon)	Pozniak, Boguslaw	2207 (L02, Wed)
Pavanello, Marcelo	1481 (H04, Tue)	Phillips, William	1126 (C02, Tue)	Prakash, A. S.	592 (A03, Thu), 2519 (Z01, Tue)
Pavone, Michele	2267 (L04, Mon)	Phung, Trung	438 (A03, Tue)	Prakash, G. K.	17 (A01, Sun), 242 (A02, Thu), 1731 (I04, Sun), 1735 (I04, Sun)
Pavunny, Shojan	71 (A01, Mon), 2653 (Z03, Wed)	Piana, Michele	376 (A03, Tue), 1721 (I04, Sun)	Prakash, Kamal	1023 (B08, Tue)
Pearce, Charles	2627 (Z02, Wed)	Piccolo, Laurent	1668 (I03, Tue)	Prakash, Raju	44 (A01, Mon)
Pearton, Stephen	1419 (H01, Tue), 1421 (H01, Tue), 1423 (H01, Tue)	Pickering, Jason	217 (A02, Wed)	Pramanick, Bidhan	1030 (B09, Sun)
Peaslee, David	2418 (M01, Tue)	Pickrell, Greg	1406 (H01, Mon)	Prasad, A. Muneendra	2558 (Z01, Tue)
Peck, Jason	151 (A01, Wed)	Piernas-Muñoz, María José	466 (A03, Wed)	Prasad, Shalini	1190 (D02, Mon), 1491 (H03, Mon), 2439 (M01, Wed), 2440 (M01, Wed), 2448 (M01, Wed)
Pedersen, Anders	2287 (L04, Tue)	Pierre, Fabien	4 (A01, Sun)	Prathap, Hairidoss	44 (A01, Mon)
Peethala, Brown	1262 (E02, Wed)	Pierson, Meghan	188 (A02, Tue)	Prato, Maurizio	813 (B05, Wed)
Peled, Emanuel	561 (A03, Wed)	Pietron, Jeremy	1871 (I05, Tue)	Prato, Mirko	2334 (L05, Wed)
Peljo, Pekka	18 (A01, Sun), 179 (A02, Tue), 2065 (K03, Wed)	Pigos, Elena	624 (B01, Sun)	Pratt III, Harry	1356 (F02, Wed)
Pellicer, Eva	1293 (F01, Tue)	Pilar, Kartik	2521 (Z01, Tue)	Preciado, Kevin	1198 (E01, Tue)
Pemble, Martyn	103 (A01, Mon), 1191 (D02, Mon)	Pilon, Laurent	163 (A01, Wed), 164 (A01, Wed)	Prem, Prabhakaran	1144 (D01, Mon)
Peña Hueso, Adrian	2 (A01, Sun), 573 (A03, Thu)	Pimenta, Marcos	869 (B06, Wed)	Preusse, Axel	1254 (E02, Wed)
Peng, Huisheng	1544 (H04, Tue)	Pinal, Rebecca	687 (B02, Mon)	Preuß, Annegret	1008 (B08, Tue)
Peng, Jing	198 (A02, Tue), 1755 (I04, Tue), 1760 (I04, Tue), 1777 (I04, Wed), 2293 (L04, Tue)	Pinchon, Erica	2245 (L03, Wed), 2251 (L03, Wed)	Price, Richard	1449 (H01, Wed)
Peng, Lishan	1653 (I03, Mon)	Pineault, Richard	2361 (L05, Thu)	Prieto, Amy	1202 (E01, Tue)
Peng, Luwei	1618 (I02, Wed), 1636 (I02, Thu)	Pinkowitz, Ainsley	1095 (C01, Wed)	Priewe, Eva	2522 (Z01, Tue)
Peng, Thomas	1316 (F01, Wed)	Pinkwart, Karsten	1270 (F01, Mon)	Prikryl, Jan	2401 (L06, Tue)
Peng, Xiong	1603 (I02, Wed), 1754 (I04, Tue)	Pint, Bruce	1116 (C02, Mon)	Prinz, Fritz	1720 (I04, Sun)
Peng, Zhe	457 (A03, Wed)	Piotrowicz, Stéphane	1412 (H01, Mon)	Pritzker, Mark	2558 (Z01, Tue)
Penicaud, Alain	854 (B06, Tue)	Piryatinski, Yu.	1149 (D01, Mon)	Pritzl, Daniel	63 (A01, Mon), 139 (A01, Tue), 402 (A03, Tue), 2567 (Z01, Tue)
Penna, Kirlene	1071 (C01, Tue)	Pita, Marcos	1995 (I07, Mon)	Prodi, Luca	2084 (K03, Thu)
Penney, Christopher	156 (A01, Wed)	Pitman, Catherine	1871 (I05, Tue)	Proffit, Danielle	259 (A03, Sun)
Penny, C.	1371 (G01, Mon)	Pivovar, Bryan	1648 (I03, Mon)	Prokopchuk, Demyan	2005 (I07, Mon)
Pepler, Madison	2507 (M02, Tue)	Piwko, Markus	337 (A03, Mon)	Prorok, Bart	2457 (M01, Wed)
Peracchio, Aldo	1756 (I04, Tue)	Placais, Bernard	879 (B06, Wed)	Proshlyakov, Denis	1019 (B08, Tue)
Percival, Stephen	209 (A02, Tue), 235 (A02, Wed), 2381 (L06, Mon)	Plana, Daniela	1225 (E02, Tue)	Przybylski, Marek	1530 (H03, Wed)
Perebikovskiy, Alexandra	666 (B02, Sun)	Ploense, Lloyd	2417 (M01, Tue)	Psaltis, Demetri	1821 (I05, Sun)
		Ploner, Alexandra	1280 (F01, Mon)	Ptasinska, Sylwia	1898 (I05, Thu)
		Plumeré, Nicolas	2238 (L03, Wed), 2250 (L03, Wed)		
		Poblet, Josep M.	806 (B05, Wed)		

Author Index

Author	Abs No.
Pugh, Nick	2643 (Z03, Wed)
Pugnant, Andrien	1626 (I02, Thu)
Pugolovkin, Leonid	2194 (L02, Tue)
Pujitha, Illa	1036 (B09, Sun)
Pulcinelli, Sandra	1090 (C01, Wed)
Pulikkathodi, Anil	1485 (H03, Mon), 1487 (H03, Mon)
Pumera, Martin	861 (B06, Tue)
Pumera, Martin	833 (B06, Mon)
Pumnea, Alex	822 (B05, Thu)
Punchihewa, Kasun	1368 (G01, Mon)
Puntambekar, Ajinkya	27 (A01, Mon)
Pupek, Krzysztof	475 (A03, Wed)
Purdy, Geraldine	1991 (I06, Wed), 2313 (L05, Tue)
Purrello, Roberto	994 (B08, Mon)
Pusa, Janne	1797 (I04, Wed), 1817 (I04, Thu)
Putz, Andreas	1816 (I04, Thu)

Q

Qadir, Saniya	2574 (Z01, Tue)
Qi, Jing	1588 (I01, Wed)
Qi, Yanbo	1326 (F02, Tue), 1350 (F02, Wed), 1354 (F02, Wed)
Qi, Yanbo	1343 (F02, Wed)
Qi, Yitong	509 (A03, Wed)
Qi, Yue	321 (A03, Mon), 346 (A03, Mon), 1940 (I06, Mon), 2278 (L04, Mon)
Qi, Zhen	1610 (I02, Wed), 2366 (L06, Mon)
Qian, Jiangfeng	1234 (E02, Tue)
Qian, Xiaofeng	884 (B06, Wed)
Qiao, Jinli	1618 (I02, Wed), 1619 (I02, Wed), 1620 (I02, Wed), 1636 (I02, Thu)
Qiao, Xiaoyao	152 (A01, Wed), 153 (A01, Wed), 159 (A01, Wed)
Qin, Dong	1239 (E02, Tue)
Qin, Jiayu	513 (A03, Wed), 1579 (H04, Wed)
Qin, Yan	48 (A01, Mon), 460 (A03, Wed)
Qing, Geletu	2019 (I07, Tue)
Qiu, Jingjing	1904 (I05, Thu)
Qiu, Mengting	960 (B08, Sun)
Qiu, Shide	2404 (M01, Tue)
Qiu, Yang	1736 (I04, Sun), 2009 (I07, Tue)
Qiu, Zhen	1678 (I03, Tue)
Qu, Jun-Le	2356 (L05, Thu)
Quaid, Andrew	2259 (L03, Thu)
Quattrocchi, Emanuele	2642 (Z03, Wed)
Quill, Nathan	197 (A02, Tue), 1980 (I06, Wed), 2395 (L06, Tue)
Quinn, Paul	1042 (C01, Mon)
Quintana, Genaro	117 (A01, Tue)

R

R., Manivannan	1377 (G01, Mon)
Rabaey, Korneel	1299 (F01, Tue)
Rabiei Baboukani, Amin	162 (A01, Wed), 433 (A03, Tue), 658 (B01, Tue), 1028 (B09, Sun), 1043 (C01, Mon), 1069 (C01, Tue)
Radhakrishnan, Balachandran	575 (A03, Thu)
Radhakrishnan, Rajeswaran	2149 (L01, Wed)
Radich, James	632 (B01, Sun), 2100 (L01, Mon)
Radin, Maxwell	168 (A01, Thu), 1946 (I06, Tue)
Radisic, Aleksandar	1251 (E02, Wed), 1264 (E02, Wed)
Radke, Clayton	1362 (F02, Thu)
Radu, Iuliana	842 (B06, Tue)
Rafiee, Mohammad	2048 (K01, Tue), 2086 (K03, Thu)
Rafou, Lily	2033 (K01, Mon), 2583 (Z01, Tue)
Rahaman, Motiar	1231 (E02, Tue)
Rahman, Julkarnyne	2409 (M01, Tue)
Rahman, Mohammad	784 (B04, Tue)
Rahn, Björn	2118 (L01, Tue)
Rahn, Kira	2113 (L01, Mon)
Raiman, Stephen	1116 (C02, Mon), 1125 (C02, Tue)

Author	Abs No.
Rais-Zadeh, Mina	1403 (H01, Mon)
Raj, Abhi	137 (A01, Tue)
Raja, Krishnan	112 (A01, Mon), 1046 (C01, Mon), 1075 (C01, Tue), 1279 (F01, Mon), 2555 (Z01, Tue)
Raja, Shilpa	1933 (I06, Mon), 1958 (I06, Tue)
Rajagopal, Rajesh	208 (A02, Tue)
Rajalakshmi, Natarajan	1970 (I06, Tue)
Rajeev, Rohan	183 (A02, Tue)
Rajeshwar, Krishnan	1844 (I05, Mon)
Raju, Kumar	254 (A03, Sun), 287 (A03, Mon)
Ramadesigan, Venkatasailanathan	614 (A04, Mon), 1340 (F02, Tue), 1343 (F02, Wed)
Ramaiyan, Kannan	2007 (I07, Tue), 2008 (I07, Tue), 2012 (I07, Tue)
Raman, Ravikumar	310 (A03, Mon)
Ramanathan, Shriram	36 (A01, Mon), 1444 (H01, Wed)
Ramani, Dilip	1962 (I06, Tue)
Ramani, Vijay	2132 (L01, Tue)
Ramani, Vijay	591 (A03, Thu), 1672 (I03, Tue), 1766 (I04, Tue), 1786 (I04, Wed), 2358 (L05, Thu)
Ramaprabhu, Prof S	318 (A03, Mon), 328 (A03, Mon), 1831 (I05, Sun)
Ramaprabhu, Sundara	155 (A01, Wed), 326 (A03, Mon)
Ramasamy, Ramaraja	51 (A01, Mon), 667 (B02, Sun), 2053 (K03, Tue), 2239 (L03, Wed), 2406 (M01, Tue), 2474 (M02, Mon)
Ramaswamy, Nagappan	1585 (I01, Wed)
Rambabu, K	318 (A03, Mon), 328 (A03, Mon)
Ramirez, Joan	1173 (D01, Wed)
Rampazzo, Enrico	2084 (K03, Thu)
Ramsdale, Catherine	1449 (H01, Wed)
Rana, Harpalsinh	773 (B04, Tue), 1559 (H04, Tue), 2536 (Z01, Tue), 2552 (Z01, Tue)
Rana, Uzma	1368 (G01, Mon)
Randolph, Katie	1646 (I03, Mon)
Randon-Vitanova, Anna	256 (A03, Sun)
Rangel, Ricardo	1480 (H02, Tue)
Rao, Reshma	2103 (L01, Mon), 2287 (L04, Tue)
Rao, Tata	320 (A03, Mon)
Rapino, Stefania	813 (B05, Wed)
Rashid, Muhammad	123 (A01, Tue)
Rashti, Ali	943 (B07, Thu)
Rashvand, Farnia	875 (B06, Wed)
Raskin, Jean-Pierre	1479 (H02, Tue)
Rasras, Mahmoud	1373 (G01, Mon)
Rastogi, Sahil	664 (B02, Sun), 1520 (H03, Wed)
Rasul, Shahid	1626 (I02, Thu)
Rather, Jahangir	771 (B04, Mon)
Ratso, Sander	2315 (L05, Tue)
Rauen, Anna	2038 (K01, Mon)
Rauf, Muhammad	2356 (L05, Thu)
Raughley, Margaret	2453 (M01, Tue)
Ravi, Vikashkumar	1842 (I05, Mon)
Ravi Narayan, Lakshmi	1121 (C02, Tue)
Ravikumar, Musuwathi	221 (A02, Wed)
Ravindran, T. R.	876 (B06, Wed)
Rawal, Saurin Hiren	2322 (L05, Tue)
Ray, Apurba	142 (A01, Wed)
Raymond, Mark	1262 (E02, Wed)
Razink, Joshua	446 (A03, Wed)
Real, Jesús	1318 (F01, Wed), 2493 (M02, Tue)
Reale, Erik	1317 (F01, Wed)
Reale Hernandez, Cuau	473 (A03, Wed)
Rebak, Raul	1108 (C02, Mon), 1125 (C02, Tue)
Reber, David	404 (A03, Tue), 2516 (Z01, Tue)
Rebetez, Michel	1297 (F01, Tue)
Reboh, Shay	1370 (G01, Mon)
Reddy, Olivia	2264 (L03, Thu)
Redfern, Paul	570 (A03, Thu)
Redko, Vlad	47 (A01, Mon), 2423 (M01, Tue)

Author	Abs No.
Redwing, Joan	845 (B06, Tue)
Reed, David	26 (A01, Mon), 216 (A02, Wed), 239 (A02, Thu), 241 (A02, Thu), 243 (A02, Thu), 453 (A03, Wed)
Reeping, Kyle	1140 (C02, Wed)
Regalbutto, John	1278 (F01, Mon)
Rehman Gohar, Abdur	1302 (F01, Tue)
Rehnlund, David	392 (A03, Tue), 1205 (E01, Wed)
Reich, Stephanie	720 (B03, Wed)
Reid, Russell	1545 (H04, Tue), 2531 (Z01, Tue)
Reikowski, Finn	2118 (L01, Tue)
Rein, Regis	1021 (B08, Tue)
Reinsberg, Philip	2331 (L05, Wed)
Reissner, Michael	1161 (D01, Tue), 2394 (L06, Tue)
Remington, Emily	1123 (C02, Tue), 1137 (C02, Wed)
Rempe, Susan	2381 (L06, Mon)
Ren, Fan	1419 (H01, Tue), 1421 (H01, Tue), 1423 (H01, Tue)
Ren, Feihong	457 (A03, Wed)
Ren, Xiaodi	394 (A03, Tue), 548 (A03, Wed), 587 (A03, Thu), 1234 (E02, Tue)
Ren, Yang	460 (A03, Wed), 1736 (I04, Sun)
Ren, Yang	425 (A03, Tue)
Ren, Yuxun	186 (A02, Tue), 187 (A02, Tue), 276 (A03, Sun), 285 (A03, Sun)
Renaud, Gilles	843 (B06, Tue)
Renna, Lawrence	2284 (L04, Tue)
Renner, Julie	2013 (I07, Tue), 2014 (I07, Tue), 2054 (K03, Tue)
Renner, Julie	2002 (I07, Mon)
Renuka Balakrishna, Ananya	1960 (I06, Tue)
Restrepo, David	679 (B02, Mon)
Retha, Peach	1601 (I02, Wed)
Reuter, Stephan	1177 (D02, Mon)
Reynard, Danick	179 (A02, Tue)
Reynolds, Daryl	2421 (M01, Tue), 2453 (M01, Wed)
Rheinfeld, Alexander	34 (A01, Mon)
Rho, Jihun	2523 (Z01, Tue)
Rho, Junsuk	1526 (H03, Wed)
Rhodes, Christopher	2205 (L02, Wed)
Ribeiro, Josimar	1071 (C01, Tue)
Ribeiro, Thales	1481 (I02, Tue)
Ricco, Antonio	2488 (M02, Tue)
Richter, Lee	1253 (E02, Wed)
Rickhoff, Thomas	2573 (Z01, Tue)
Ridley, Robyn	1168 (D01, Wed)
Riedo, Andreas	1259 (E02, Wed)
Riehl, Barbara	2039 (K01, Mon)
Riel, Heike	1381 (G01, Tue), 1474 (H02, Tue)
Rignanese, Gian-Marco	468 (A03, Wed)
Riha, Shannon	2522 (Z01, Tue)
Rikka, Vallabha	44 (A01, Mon)
Rill, Laura	471 (A03, Wed)
Ringe, Stefan	1632 (I02, Thu)
Rinnert, Hervé	1156 (D01, Tue)
Rios, Alejandra	2044 (K01, Tue)
Rios, Emerson	1098 (C01, Wed)
Riphaus, Nathalie	488 (A03, Wed)
Riquelme, Jorge	2187 (L02, Tue)
Risse, Sebastian	652 (B01, Tue)
Ritala, Mikko	1465 (H02, Mon)
Ritzert, Nicole	1230 (E02, Mon)
Riusech, Olga	2113 (L01, Mon)
Robba, Ana	256 (A03, Sun)
Robbennolt, Shauna	145 (A01, Wed)
Robel, Istvan	922 (B07, Wed), 1887 (I05, Wed)
Robert, Mylene	1795 (I04, Wed)
Roberts, Edward	2386 (L06, Tue)
Roberts, Edward	1287 (F01, Tue), 2213 (L02, Wed), 2391 (L06, Tue)
Roberts, Jessica	2438 (M01, Wed)
Roberts, Matthew	421 (A03, Tue)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Roberts, Scott	134 (A01, Tue), 135 (A01, Tue), 173 (A01, Thu)	Ruppel, Michael	975 (B08, Sun)	Sakurai, Hidehiro	941 (B07, Wed)
Robins, Matthew	2007 (I07, Tue)	Rus, Eric	417 (A03, Tue)	Salager, Elodie	602 (A03, Thu)
Rochal, Sergei	750 (B03, Thu)	Rusling, James	2061 (K03, Wed)	Salahuddin, Sayeef	1367 (G01, Mon)
Roche, Cecile	985 (B08, Mon)	Ruther, Rose	49 (A01, Mon), 106 (A01, Mon), 288 (A03, Mon), 2629 (Z02, Wed)	Salama, Michael	261 (A03, Sun)
Rodene, Dylan	2094 (K03, Thu)	Rutkowska, Iwona	2302 (L05, Mon), 2309 (L05, Mon), 2325 (L05, Tue), 2341 (L05, Wed)	Salem, Daniel	731 (B03, Wed)
Rodgers, Martin	1382 (G01, Tue)	Ryabova, Anna	2318 (L05, Tue)	Salgado, Jose Ricardo	87 (A01, Mon), 1803 (I04, Wed)
Rodošek, Mirjana	1073 (C01, Tue)	Ryan, Emily	600 (A03, Thu)	Salian, Girish	399 (A03, Tue)
Rodrigues da Cunha, Rafael Ottoniel	1803 (I04, Wed)	Ryan, Louise	103 (A01, Mon), 1191 (D02, Mon)	Salian, Girish	1215 (E01, Wed)
Rodriguez, Alvaro	1067 (C01, Tue)	Ryan, Mary	1042 (C01, Mon), 1784 (I04, Wed)	Salinas, Maria	2570 (Z01, Tue)
Rodriguez, David	1139 (C02, Wed)	Rybalchenko, Maria	1980 (I06, Wed)	Salitra, Gregory	462 (A03, Wed)
Rodriguez Garcia, Carlos Alberto	1430 (H01, Tue)	Rydosz, Artur	1530 (H03, Wed)	Salot, Raphaël	1214 (E01, Wed)
Rodriguez Pérez, Ismael	193 (A02, Tue), 258 (A03, Sun), 521 (A03, Wed)	Ryoo, Ryong	623 (B01, Sun), 636 (B01, Sun), 2383 (L06, Mon)	Salvador, James	206 (A02, Tue)
Rodriguez-Fortea, Antonio	806 (B05, Wed)	Ryou, Myung-Hyun	91 (A01, Mon), 92 (A01, Mon), 598 (A03, Thu)	Salvante, Katrina	2503 (M02, Tue)
Roeder, Beate	1008 (B08, Tue)	Ryu, Hanjun	1554 (H04, Tue)	Salzano de Luna, Martina	1088 (C01, Wed)
Roger, Isolda	1706 (I03, Thu)	Ryu, Hye-Min	491 (A03, Wed), 545 (A03, Wed)	Sam, Alyssa	220 (A02, Wed)
Rogers, Reginald	387 (A03, Tue)	Ryu, Jin Su	2635 (Z02, Wed), 2652 (Z03, Wed)	Sambandan, Sanjiv	1565 (H04, Wed)
Roh, Youngjoon	92 (A01, Mon), 598 (A03, Thu)	Ryu, Kwang-Sun	208 (A02, Tue)	Sambi, Marco	1385 (G01, Tue)
Rohan, James	1208 (E01, Wed), 190 (I05, Thu)	Ryu, TaeSeon	1266 (E02, Wed)	Sambur, Justin	2125 (L01, Tue)
Rohloff, Martin	1730 (I04, Sun)	Ryu, WonHyoun	2058 (K03, Tue)	Sampedro, Carlos	1474 (H02, Tue)
Rojas-Carbonell, Santiago	1751 (I04, Mon)			San Roman, Daniel	637 (B01, Sun), 664 (B02, Sun), 1025 (B09, Sun)
Rojo, Teófilo	579 (A03, Thu)			Sanborn, Christopher	2284 (L04, Tue)
Rolet, Jason	1261 (E02, Wed), 1263 (E02, Wed)			Sanchez, Daniel G.	14 (A01, Sun)
Roling, Luke	2164 (L02, Mon)			Sanchez, Stephen	730 (B03, Wed), 752 (B03, Thu)
Rolison, Debra	1871 (I05, Tue)			Sancy, Mamié	1102 (C01, Wed)
Rolison, Debra	1843 (I05, Mon)			Sandberg, Robert	2233 (L02, Thu)
Rolland, Julien	585 (A03, Thu)			Sandin, Staffan	1272 (F01, Mon)
Roller, Justin	45 (A01, Mon), 1643 (I03, Mon), 1728 (I04, Sun)			Sandineni, Prashanth	388 (A03, Tue)
Rollins, Brandon	1053 (C01, Mon)			Sanghadasa, Mohan	61 (A01, Mon), 107 (A01, Mon)
Romanitan, Cosmin	1191 (D02, Mon)			Sankar, Muniappan	1022 (B08, Tue), 1023 (B08, Tue)
Romankiw, Lubomyr	1310 (F01, Wed)			Sankar, Muniappan	980 (B08, Sun)
Romann, Tavo	1203 (E01, Tue), 2308 (L05, Mon)			Sankaran, R. Mohan	2014 (I07, Tue)
Ronda, Antoine	1172 (D01, Wed)			Sankarasubramanian, Shrihari	2358 (L05, Thu)
Ronney, Paul	17 (A01, Sun)			Sankarasubramanian, Shrihari	1786 (I04, Wed)
Rooney, Ryan	1252 (E02, Wed)			Sankarasubramanian, Shrihari	591 (A03, Thu), 1766 (I04, Tue), 2132 (L01, Tue)
Roper, Thomas	2094 (K03, Thu)			Sankhala, Devang	2439 (M01, Wed)
Roschning, Benedikt	1989 (I06, Wed)			Sannyal, Arindam	757 (B04, Mon), 778 (B04, Tue)
Ross, Frances	1251 (E02, Wed)			Sano, Toshifumi	2640 (Z03, Wed)
Rossman, Carolyn	1308 (F01, Tue)			Sant, Roberto	843 (B06, Tue)
Rossmeisl, Jan	2287 (L04, Tue), 2316 (L05, Tue)			Sant, Saurabh	1381 (G01, Tue)
Rosso, Kevin	1078 (C01, Tue), 2109 (L01, Mon)			Santare, Michael	1988 (I06, Wed)
Rostamikia, Gholamreza	2000 (I07, Mon)			Santefort, David	2526 (Z01, Tue)
Rostau, Magdalena	1033 (B09, Sun)			Santhanagopalan, Shriram	126 (A01, Tue), 356 (A03, Mon), 1331 (F02, Tue)
Rother, Gernot	93 (A01, Mon)			Santhosh, Neelakandan	1179 (D02, Mon)
Rothgeb, Amanda	805 (B05, Wed)			Santiago, Elisabete	1593 (I01, Wed)
Rotkin, Slava	749 (B03, Thu)			Santilli, Celso	1090 (C01, Wed)
Roué, Lionel	473 (A03, Wed)			Sanyal, Udishnu	1634 (I02, Thu), 1822 (I05, Sun)
Rousseau, Nicolas	4 (A01, Sun)			Saqib, Muhammad	2608 (Z01, Tue)
Rouviere, Jean-Luc	1370 (G01, Mon)			Saraf, Nilesi	2507 (M02, Tue)
Rowell, Nelson	1171 (D01, Wed)			Saralch, Sudhir	1248 (E02, Tue)
Roxbury, Daniel	674 (B02, Mon), 679 (B02, Mon), 746 (B03, Thu)			Sarangadharan, Indu	1485 (H03, Mon), 1487 (H03, Mon)
Roy, Anisha	2431 (M01, Wed)			Sarawutanukul, Sangchai	1650 (I03, Mon)
Roy, Asa	1755 (I04, Tue)			Saraya, Takuya	1470 (H02, Tue)
Roy, Atanu	142 (A01, Wed)			Sargent, Edward	1609 (I02, Wed)
Rozhkova, Elena	1893 (I05, Wed)			Sarioglu, A. Fatih	2481 (M02, Mon)
Rozière, Jacques	2340 (L05, Wed)			Sarkar, Ananta	410 (A03, Tue)
Rua, Armando	2521 (Z01, Tue)			Sarkar, Debasis	146 (A01, Wed)
Rubin, Yves	811 (B05, Wed)			Sarswat, Prashant	1294 (F01, Tue)
Rubinstein, Israel	1242 (E02, Tue)			Sarvari, Hojjatollah	886 (B06, Wed), 917 (B07, Tue)
Rubinstein, Shmuel	21 (A01, Sun)			Sarvghad, Madjid	1115 (C02, Mon)
Rubio-Bollinger, Gabino	985 (B08, Mon)			Sarwar, Saad	920 (B07, Tue)
Rubio-Garcia, Javier	219 (A02, Wed), 1820 (I05, Sun)			Sasaki, Izuru	481 (A03, Wed)
Rudko, G.	1149 (D01, Mon)			Sasaki, Katia	1480 (H02, Tue)
Rudola, Ashish	444 (A03, Wed)			Sasaki, Kazunari	1685 (I03, Wed), 1934 (I06, Mon), 1944 (I06, Mon), 2359 (L05, Thu), 2591 (Z01, Tue)
Ruehl, Griffin	1634 (I02, Thu)			Sasaki, Kotaro	2167 (L02, Mon), 2173 (L02, Mon), 2174 (L02, Mon)
Ruge, Martin	2118 (L01, Tue), 2611 (Z01, Tue)			Sasaki, Shunsuke	489 (A03, Wed)
Ruiz, Carolina	916 (B07, Tue)				
Rumpf, Klemens	1161 (D01, Tue), 2394 (L06, Tue), 2396 (L06, Tue)				
Ruotolo, Luis Augusto	1306 (F01, Tue)				
Rupp, Jennifer	1 (A01, Sun), 1952 (I06, Tue)				

S

S., Noyel Victoria	1377 (G01, Mon)
Saar, Rando	2315 (L05, Tue)
Saatchi, Ahmad	1043 (C01, Mon), 1069 (C01, Tue)
Sabarirajan, Dinesh	2376 (L06, Mon)
Sabhpathy, Palani	1658 (I03, Mon)
Sabolsky, Edward	158 (A01, Wed), 1791 (I04, Wed), 2419 (M01, Tue), 2421 (M01, Tue), 2453 (M01, Wed)
Sabolsky, Katarzyna	2419 (M01, Tue), 2421 (M01, Tue), 2453 (M01, Wed)
Sacci, Robert	8 (A01, Sun), 58 (A01, Mon), 93 (A01, Mon), 2629 (Z02, Wed)
Saccoccio, Mattia	2642 (Z03, Wed)
Saccone, Max	891 (B06, Thu)
Sada, Krishnakanth	383 (A03, Tue), 2307 (L05, Mon)
Saddique, Waqas	1926 (I05, Thu), 2290 (L04, Tue)
Sadeghi, Saman	2041 (K01, Tue), 2044 (K01, Tue)
Sadki, Said	147 (A01, Wed), 467 (A03, Wed)
Saeed, Mafouz	1927 (I05, Thu)
Saeki, Isao	1133 (C02, Tue), 1135 (C02, Tue)
Safae, Mohammad	679 (B02, Mon)
Sagaidak, Iryna	2146 (L01, Wed)
Sagawa, Takashi	914 (B07, Tue)
Saha, Avishek	719 (B03, Wed)
Saha, Partha	2129 (L01, Tue)
Saha, Samik	142 (A01, Wed)
Saha, Sudip	2141 (L01, Wed)
Saha, Sulay	1273 (F01, Mon), 1688 (I03, Wed), 2237 (L02, Thu)
Sahin, Selmihan	1995 (I07, Mon)
Sahoo, Madhumita	1763 (I04, Tue), 1764 (I04, Tue)
Sahoo, Suban	2447 (M01, Wed)
Sahore, Ritu	567 (A03, Thu), 568 (A03, Thu)
Sahu, Sumit	44 (A01, Mon)
Saida, Takahiro	1724 (I04, Sun), 2587 (Z01, Tue), 2592 (Z01, Tue)
Saikumar, Ashwin Kumar	2538 (Z01, Tue)
Sailor, M.	2393 (L06, Tue)
Saito, Daiki	1440 (H01, Wed)
Saito, Haruka	1913 (I05, Thu)
Saito, Koichiro	931 (B07, Wed)
Sakai, Akihiro	484 (A03, Wed)
Sakai, Hayato	940 (B07, Wed)
Sakaida, Masashi	484 (A03, Wed)
Sakakibara, Kan	2592 (Z01, Tue)
Sakamoto, Jeff	479 (A03, Wed), 483 (A03, Wed), 586 (A03, Thu)
Sakata, Toshiya	1484 (H03, Mon)
Sakthivel, Tamil	104 (A01, Mon)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Sasaki, Tsuyoshi	265 (A03, Sun)	Schumacher, Gerhard	382 (A03, Tue)	Serov, Alexey	1672 (I03, Tue), 1734 (I04, Sun)
Sassin, Megan	1235 (E02, Tue)	Schuman, Samuel	853 (B06, Tue)	Serrano, Gonzalo	181 (A02, Tue)
Sata, Noriko	1597 (I02, Wed)	Schuppler, Stefan	1721 (I04, Sun)	Serrano Mora, Adrian	1290 (F01, Tue)
Sathasivam, Kamalasekaran	1047 (C01, Mon)	Schwalbe, Jay	2010 (I07, Tue)	Seshadhri, Garapati Meenakshi	318 (A03, Mon),
Sato, Fumiaki	1724 (I04, Sun)	Schwalke, Udo	900 (B06, Thu)	328 (A03, Mon), 1831 (I05, Sun)	
Sato, Kentaro	950 (B07, Thu)	Schwan, Joseph	419 (A03, Tue)	Seshadhri, Srivatsan	269 (A03, Sun),
Sato, Takaya	2027 (K01, Mon)	Schwanz, Derek	1444 (H01, Wed)	2338 (L05, Wed)	
Sato, Taketomo	2550 (Z01, Tue)	Schwartz, Daniel	1343 (F02, Wed),		
Sato, Yasushi	2644 (Z03, Wed)	1354 (F02, Wed)	1088 (C01, Wed)		
Sato, Yasushi	2046 (K01, Tue)	Schwartz, Eric	2284 (L04, Tue)	Sest, Ervin	1088 (C01, Wed)
Sato, Yukari	194 (A02, Tue)	Schwarz, Christoph	211 (A02, Tue)	1003 (B08, Tue)	
Saucedo, Cynthia	2570 (Z01, Tue)	Schwarzacher, Walther	2275 (L04, Mon)	Setzler, Brian	1751 (I04, Mon), 1997 (I07, Mon)
Sauer, Dirk Uwe	250 (A03, Sun)	Sclar, Hadar	310 (A03, Mon)	Sevostianov, S.	1149 (D01, Mon)
Sauvage, Frédéric	2146 (L01, Wed)	Scohy, Marion	1644 (I03, Mon)	Sexton, James	2476 (M02, Mon)
Sauvage, Madline	692 (B02, Tue)	Scordilis-Kelley, Charlie	302 (A03, Mon)	Seznec, Vincent	62 (A01, Mon), 602 (A03, Thu)
Sauvajol, Jean-Louis	750 (B03, Thu)	Scott, Ben	393 (A03, Tue)	Shabanov, Aslan	2079 (K03, Wed)
Sava Gallis, Dorina	2384 (Z03, Wed)	Scott, Jessica	224 (A02, Wed)	Shadike, Zulpiya	312 (A03, Mon)
Savadogo, Oumarou	1271 (F01, Mon)	Scott, Keith	2247 (L03, Wed)	Shaffer, Julia	2510 (M02, Tue)
Savaniu, Cristian	1661 (I03, Mon)	Scott, Soren	1612 (I02, Wed)	Shah, Andrew	188 (A02, Tue)
Savinova, Elena	2194 (L02, Tue), 2318 (L05, Tue)	Seal, Sudipta	104 (A01, Mon), 2507 (M02, Tue)	Shah, Janki	674 (B02, Mon), 746 (B03, Thu)
Savtchouk, Alexandre	1384 (G01, Tue)	Searles, Thomas	512 (A03, Tue)	Shah, Shreyas	2409 (M01, Tue),
Sawada, Asuka	1775 (I04, Wed)	Sedlmaier, Stefan	488 (A03, Wed)	2480 (M02, Mon), 2483 (M02, Mon)	
Sawamoto, Naomi	837 (B06, Tue)	Seger, Brian	1612 (I02, Wed),		
Sawangphruk, Montree	535 (A03, Wed),	1912 (I05, Thu), 2226 (L02, Thu)			
621 (B01, Sun), 626 (B01, Sun),					
655 (B01, Tue), 1650 (I03, Mon),					
2279 (L04, Mon), 2353 (L05, Wed)					
Sawano, Kentarou	1174 (D01, Wed)	Segre, Carlo	35 (A01, Mon)	Shahzad, Moaiz	1120 (C02, Tue)
Sawas, Abdul Razzag	515 (A03, Wed)	Seguin, Trevor	262 (A03, Sun), 363 (A03, Sun)	Shaibani, Mahdokht	620 (B01, Sun)
Sayle, Dean	104 (A01, Mon)	Seidl, Lukas	381 (A03, Tue)	Shakeri Hosseinabad, Fatemeh	2386 (L06, Tue)
Sazhin, Sergiy	604 (A03, Thu)	Seidler, Gerald	2122 (L01, Tue)	Shakouri, Ali	1418 (H01, Tue)
Scarlat, Raluca	1124 (C02, Tue), 2470 (M01, Thu)	Sekar, Chinnathambi	2428 (M01, Wed)	Shamay, Yosef	746 (B03, Thu)
Schaefer, Jennifer	255 (A03, Sun)	Sekar, Chinnathambi	2469 (M01, Thu)	Shan, Dan	2435 (M01, Wed)
Schäfer, Jan	1177 (D02, Mon)	Sekar, Narendran	2053 (K03, Tue)	Shan, Nanman	2111 (L01, Mon)
Schaltz, Erik	532 (A03, Wed)	Sekhar, Praveen	2403 (M01, Tue),	Shan, Wenqian	977 (B08, Sun)
Schappacher, Falko	359 (A03, Mon)	2409 (M01, Tue), 2480 (M02, Mon),			
Schauerman, Christopher	131 (A01, Tue)	2483 (M02, Mon)			
Scheffler, Towner	2411 (M01, Tue)	Seki, Juntaro	584 (A03, Thu)	Shanahan, Jordan	2556 (Z01, Tue)
Scheidt, Rebecca	1842 (I05, Mon)	Seki, Ryohei	2517 (Z01, Tue)	Shang, Baihua	1092 (C01, Wed)
Schenk, Andreas	1381 (G01, Tue)	Seki, Shu	956 (B07, Thu)	Shang, Xia	109 (A01, Mon)
Scherson, Daniel	2207 (L02, Wed)	Seki, Tomohiro	942 (B07, Wed)	Shankar, Akshaya	733 (B03, Wed)
Scheunert, Christin	1254 (E02, Wed)	Sekita, Michael	982 (B08, Mon)	Shanthi, Pavithra	39 (A01, Mon), 40 (A01, Mon)
Schiller, Guenter	1597 (I02, Wed)	Seland, Frode	1315 (F01, Wed),	Shao, Minhua	441 (A03, Tue)
Schipper, Florian	310 (A03, Mon)	1737 (I04, Sun), 1773 (I04, Wed),			
Schladt, Thoams	1720 (I04, Sun)	1806 (I04, Wed), 2224 (L02, Thu),			
Schlegel, Nicolas	1231 (E02, Tue)	2489 (M02, Tue)			
Schlenker, Cody	249 (A03, Sun)	Selberherr, Siegfried	1469 (H02, Tue),		
Schlom, Darrell	1782 (I04, Wed), 2211 (L02, Wed)	1477 (H02, Tue)			
Schlueter, Debbie	1734 (I04, Sun)	Selis, Luis	432 (A03, Tue)		
Schmalstieg, Johannes	250 (A03, Sun)	Sellgren, Katelyn	1308 (F01, Tue)		
Schmid, Heinz	1381 (G01, Tue)	Sellier, Manuel	1455 (H02, Mon)		
Schmidt, Ralf	1252 (E02, Wed)	Sellin, Remy	1788 (I04, Wed)		
Schmidt, Thomas	1676 (I03, Tue), 1793 (I04, Wed)	Selloni, Annabella	1861 (I05, Tue)		
Schmitt, Kevin	1252 (E02, Wed)	Selvagananpathy, Ravi	2467 (M01, Thu)		
Schmuki, Patrik	1918 (I05, Thu), 2398 (L06, Tue)	Seminario, Jorge	432 (A03, Tue)		
Schmuki, Patrik	1709 (I03, Thu), 1899 (I05, Thu)	Sen, Sujat	2149 (L01, Wed)		
Schneider, Andreas	211 (A02, Tue)	Senegor, Richard	2510 (M02, Tue)		
Schneider, Oliver	381 (A03, Tue)	Senoh, Hiroshi	380 (A03, Tue)		
Schneider, Philipp-Immanuel	1164 (D01, Wed)	Sentosun, Kadir	1258 (E02, Wed)		
Schneider, Sven	652 (B01, Tue)	Seo, Dong-Hwa	385 (A03, Tue)		
Schneider, William	2003 (I07, Mon)	Seo, Hyungeun	559 (A03, Wed)		
Schneier, Dan	561 (A03, Wed)	Seo, Hyungtak	105 (A01, Mon), 779 (B04, Tue),		
Schoefberger, Wolfgang	968 (B08, Sun)	903 (B07, Tue), 1453 (H01, Wed),			
Schoeppler, Friedrich	700 (B03, Thu),				
748 (B03, Tue)					
Scholta, Joachim	1772 (I04, Tue), 1818 (I04, Thu)	Seo, Ilsung	204 (A02, Tue), 205 (A02, Tue)		
Schoop, Urs	302 (A03, Mon)	Seo, Min Ho	1679 (I03, Tue), 1716 (I03, Thu)		
Schram, Tom	842 (B06, Tue)	Seo, Yerin	2548 (Z01, Tue)		
Schroyer, Bret	1384 (G01, Tue)	Seo, Youngho	332 (A03, Mon)		
Schreier, Marcel	1622 (I02, Wed)	Seok, Ogyun	1438 (H01, Wed)		
Schricker, Barbara	222 (A02, Wed)	Seong, Tae-Yeon	1400 (H01, Mon),		
Schröder, Daniel	2292 (L04, Tue)	1402 (H01, Mon), 1437 (H01, Tue),			
Schroeder, Marshall	548 (A03, Wed)	2156 (L01, Wed)			
Schuergers, Nils	680 (B02, Mon)	Seong, won Mo	1682 (I03, Tue)		
Schultze, Trevor M	451 (A03, Wed)	Seong, Won Mo	294 (A03, Mon)		
Schulze, Mathias	14 (A01, Sun)	Seredych, Mykola	1136 (C02, Wed)		
		Serizawa, Nobuyuki	227 (A02, Wed)		
		Serna, Rosalia	1147 (D01, Mon)		
		Serna, Samuel	1173 (D01, Wed)		
		Serov, Alexey	1779 (I04, Wed), 2209 (L02, Wed)		

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Sheng, Haifeng	1183 (D02, Mon)	Shrestha, Nikunja	112 (A01, Mon), 1279 (F01, Mon)	Sivula, Kevin	1900 (I05, Thu)
Sheng, Wenchao	2231 (L02, Thu)	Shrivastava, Aniruddh	32 (A01, Mon)	Siwabessy, Andrew	1982 (I06, Wed)
Shenoy, Vivek	1951 (I06, Tue)	Shrivastava, Udit	2387 (L06, Tue)	Sizemore, Elizabeth	669 (B02, Sun), 681 (B02, Mon), 693 (B02, Tue), 694 (B02, Tue)
Sherrard, Joseph	1183 (D02, Mon)	Shrotriya, Pranav	2432 (M01, Wed), 2494 (M02, Tue)	Skaftun, Siri Marie	1315 (F01, Wed)
Sherry, Brian	2566 (Z01, Tue), 2569 (Z01, Tue)	Shterenberg, Ivgeni	261 (A03, Sun)	Skaria, Giji	2601 (Z01, Tue)
Shi, Guoyu	2210 (L02, Wed)	Shu, Tianpei	1287 (F01, Tue)	Skilbred, Ellen Synnøve	181 (A02, Tue)
Shi, Jianlin	2328 (L05, Tue)	Shuchi, Halima	1074 (C01, Tue), 2545 (Z01, Tue)	Skinn, Brian	1322 (F01, Wed), 2149 (L01, Wed), 2357 (L05, Thu)
Shi, Lili	315 (A03, Mon)	Shukla, Ashok	146 (A01, Wed), 221 (A02, Wed)	Skrzypkiewicz, Marek	1307 (F01, Tue)
Shi, Meng	2641 (Z03, Wed)	Shul, Yong Gun	593 (A03, Thu), 1961 (I06, Tue)	Slaby, Jachym	2172 (L02, Mon)
Shi, Qiurong	1683 (I03, Wed), 2367 (L06, Mon), 2549 (Z01, Tue)	Shurtz, Randy	273 (A03, Sun), 369 (A03, Mon)	Slanina, Zdenek	807 (B05, Wed)
Shi, Tan	373 (A03, Tue)	Shutthanandan, Vaithiyalingam	298 (A03, Mon)	Sloop, Steven	607 (A04, Mon)
Shi, Wenda	823 (B05, Thu)	Shyy, Wei	187 (A02, Tue)	Slotcavage, Dan	1260 (E02, Wed)
Shi, Xinjian	1602 (I02, Wed)	Si, Yongchao	1054 (C01, Mon)	Small, Leo	209 (A02, Tue), 235 (A02, Wed), 2381 (L06, Mon), 2471 (M01, Thu)
Shi, Xu	925 (B07, Wed), 1869 (I05, Tue)	Siahrostami, Samira	1602 (I02, Wed), 1605 (I02, Wed), 1689 (I03, Wed), 2297 (L05, Mon), 2344 (L05, Wed), 2346 (L05, Wed)	Smialek, James	1131 (C02, Tue)
Shi, Yan	1657 (I03, Mon)	Sibert, Eric	1644 (I03, Mon)	Smith, Aaron	2491 (M02, Tue)
Shi, Yaru	144 (A01, Wed)	Sicklinger, Johannes	139 (A01, Tue)	Smith, Diane	2033 (K01, Mon), 2034 (K01, Mon), 2068 (K03, Wed), 2583 (Z01, Tue), 2605 (Z01, Tue), 2607 (Z01, Tue)
Shi, Yue	789 (B05, Tue)	Siddharth, Kumar	2018 (I07, Tue)	Smith, Kandler	1323 (F02, Tue)
Shiba, Yoshinobu	2416 (M01, Tue)	Siddiqui, Shahab	1463 (H02, Mon)	Smith, Kyle	2408 (M01, Tue)
Shibata, Masao	1770 (I04, Tue)	Sidorenko, Alexander	1623 (I02, Wed)	Smith, Kyle	109 (A01, Mon), 196 (A02, Tue), 1304 (F01, Tue), 1317 (F01, Wed)
Shibata, Takayuki	28 (A01, Mon)	Siebel, Armin	1721 (I04, Sun)	Smith, Kyle	32 (A01, Mon)
Shiblee, MD Nahin	2409 (M01, Tue), 2452 (M01, Wed), 2460 (M01, Wed), 2480 (M02, Mon), 2483 (M02, Mon)	Siegal, Michael	2389 (L06, Tue)	Smith, Leigh	1169 (D01, Wed)
Shiga, Tamechito	711 (B03, Tue)	Siegel, Donald	304 (A03, Mon), 479 (A03, Wed), 483 (A03, Wed), 485 (A03, Wed), 486 (A03, Wed), 2270 (L04, Mon)	Smith, Milton	1848 (I05, Mon)
Shiga, Tohru	584 (A03, Thu)	Siegel, Jason	368 (A03, Mon)	Smith, Tanner	963 (B08, Sun)
Shih, Chien-Chung	1539 (H04, Mon)	Sierros, Kostas	2453 (M01, Wed)	Smyth, Sean	2526 (Z01, Tue)
Shih, Chih-Jen	871 (B06, Wed), 1145 (D01, Mon)	Sigman, Matthew	2088 (K03, Thu), 2240 (L03, Wed)	Snaith, Henry	643 (B01, Mon)
Shih, Kai-Yao	1398 (G01, Tue), 1399 (G01, Tue)	Silletta, Emilia	131 (A01, Tue)	Sneed, Brian	1777 (I04, Wed)
Shikano, Masahiro	380 (A03, Tue)	Silva, Caroline	87 (A01, Mon)	Snowden, Michael	2117 (L01, Tue)
Shilina, Yuliya	309 (A03, Mon)	Silva, Daniela	1102 (C01, Wed)	Snyder, Joshua	1358 (F02, Thu), 1660 (I03, Mon), 1725 (I04, Sun)
Shilov, Sergey	2121 (L01, Tue)	Silva, Manoj	1246 (E02, Tue)	Snyder, Seth	1283 (F01, Tue)
Shim, Jae-Hyun	97 (A01, Mon)	Silva, Vanessa	1468 (H02, Mon)	Snyder, Stephen	1127 (C02, Tue), 1134 (C02, Tue), 1286 (F01, Tue), 1321 (F01, Wed), 1322 (F01, Wed), 2149 (L01, Wed), 2357 (L05, Thu)
Shimakoshi, Hisashi	2050 (K01, Tue)	Silverio, Angelito	1472 (H02, Tue)	Soare, Amalia	639 (B01, Sun)
Shimizu, Akihiro	2071 (K03, Wed)	Sim, Kyu Min	2603 (Z01, Tue)	Sofer, Zdeněk	833 (B06, Mon), 861 (B06, Tue)
Shimizu, Hideyuki	802 (B05, Wed)	Sim, Sungju	200 (A02, Mon)	Sofka, Benjamin	749 (B03, Thu)
Shin, Chee Burm	85 (A01, Mon), 86 (A01, Mon)	Sim, Uk	1654 (I03, Mon), 1662 (I03, Mon), 1711 (I03, Thu)	Sohn, D.	1368 (G01, Mon)
Shin, Hyun-Seop	504 (A03, Wed)	Simic, Nina	1272 (F01, Mon)	Sohn, Myungbeom	564 (A03, Wed)
Shin, Hyung Gon	881 (B06, Wed)	Simões, Thiago	1042 (C01, Mon)	Sojic, Neso	2130 (L01, Tue)
Shin, Jae Won	623 (B01, Sun)	Simon Araya, Samuel	1665 (I03, Tue)	Sokolov, Alexei	49 (A01, Mon)
Shin, Jeong Woo	862 (B06, Tue), 1807 (I04, Wed)	Simonian, Aleksandr	2420 (M01, Tue)	Solarska, Renata	1841 (I05, Sun)
Shin, Jeongchul	1376 (G01, Mon)	Simoska, Olja	2024 (K01, Mon)	Solchenbach, Sophie	402 (A03, Tue)
Shin, Ji-Yong	435 (A03, Tue)	Simpkins, Blake	2154 (L01, Wed)	Soleymani, Leyla	2141 (L01, Wed)
Shin, Joon	266 (A03, Sun), 365 (A03, Mon)	Simpson, Burton	2123 (L01, Tue)	Solladie, Nathalie	1000 (B08, Tue), 1021 (B08, Tue)
Shin, Minchul	2051 (K03, Tue)	Sinclair, Nicholas	217 (A02, Wed)	Soloveichik, Grigori	1993 (I07, Mon)
Shin, Myoungsoo	547 (A03, Wed)	Singer, Marc	1065 (C01, Tue)	Soma, Naohiko	2514 (Z01, Tue)
Shin, Sangho	782 (B04, Tue)	Singh, Aayush	2010 (I07, Tue)	Somacescu, S	103 (A01, Mon)
Shin, Subeom	540 (A03, Wed)	Singh, Ashutosh	2213 (L02, Wed), 2391 (L06, Tue)	Somerville, Limhi	123 (A01, Tue)
Shin, Woochul	497 (A03, Wed)	Singh, Gurpreet	331 (A03, Mon), 1079 (C01, Tue)	Somphotch, Chulaluk	1059 (C01, Tue)
Shinde, Dipak	2105 (L01, Mon), 2124 (L01, Tue)	Singh, Gurvinder	1737 (I04, Sun), 2564 (Z01, Tue)	Son, Ji-Won	1937 (I06, Mon)
Shindo, Kodai	668 (B02, Sun)	Singh, Kaushlendra	158 (A01, Wed)	Son, Tae Yang	2576 (Z01, Tue), 2577 (Z01, Tue)
Shinohara, Akihiro	1770 (I04, Tue)	Singh, Meenesh	1362 (F02, Thu)	Son, Woonbae	864 (B06, Tue)
Shinohara, Kazuhiko	1809 (I04, Wed), 1810 (I04, Wed)	Singh, Navneet	1488 (H03, Mon)	Son, You-Hwan	428 (A03, Tue)
Shinokubo, Hiroshi	939 (B07, Wed)	Singh, Nirala	1634 (I02, Thu)	Son, Youngwoo	891 (B06, Thu)
Shiomi, Keishi	1401 (H01, Mon)	Singh, Prabhakar	1121 (C02, Tue), 1599 (I02, Wed)	Sone, Masato	1204 (E01, Tue)
Shirai, Yasuyuki	2416 (M01, Tue)	Singh, Pragma	835 (B06, Mon)	Song, Changhoon	82 (A01, Mon)
Shiraishi, Tomonari	718 (B03, Wed)	Singh, Shiv	2582 (Z01, Tue)	Song, Edward	2485 (M02, Mon)
Shiraki, Tomohiro	711 (B03, Tue), 718 (B03, Wed)	Singh, Yadvinder	1962 (I06, Tue), 1992 (I06, Wed)	Song, Farren	353 (A03, Mon)
Shirazi, Daniela	2044 (K01, Tue)	Singhal, Rahul	154 (A01, Wed)	Song, Haosheng	507 (A03, Wed), 508 (A03, Wed)
Shirk, Matthew	121 (A01, Tue)	Singhal, Sameer	2245 (L03, Wed), 2251 (L03, Wed)	Song, Hee Jo	524 (A03, Wed)
Shiro, Yoshitsugu	1014 (B08, Tue)	Sinha, Anirban	1514 (H03, Tue)	Song, Jiangxuan	831 (B06, Mon)
Shirpour, Mona	2648 (Z03, Wed)	Sinha, Niraj	1488 (H03, Mon)	Song, Jinho	2097 (L01, Mon)
Shitanda, Isao	1050 (C01, Mon), 1085 (C01, Tue), 1094 (C01, Wed)	Sinha, Rochan	1908 (I05, Thu)	Song, Juhye	551 (A03, Wed)
Shiwerski, Daniel	1520 (H03, Wed)	Sisk, Peter	2098 (L01, Mon)	Song, June-O	1437 (H01, Tue)
Shkrob, Ilya	230 (A02, Wed), 464 (A03, Wed), 475 (A03, Wed), 568 (A03, Thu), 570 (A03, Thu)	Sisto, Thomas	660 (B01, Tue)	Song, Junhua	1683 (I03, Wed)
Shmychkova, Olesia	1247 (E02, Tue)	Siu, Carrie	531 (A03, Wed)		
Shneider, Mikhail	1177 (D02, Mon)	Sivaneri Varadharajan Idhaim, Kavin	2421 (M01, Tue), 2453 (M01, Wed)		
Shoji, Takao	2043 (K01, Tue)				
Shoorideh, Ghazal	351 (A03, Mon)				
Shown, Indrajit	1658 (I03, Mon)				
Shrestha, Nikunja	1075 (C01, Tue)				

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Song, Junhua	50 (A01, Mon), 317 (A03, Mon), 1024 (B09, Sun)	Stanton, Noah	646 (B01, Mon)	Strmcnik, Dusan	633 (B01, Sun), 1696 (I03, Wed), 1699 (I03, Wed), 2161 (L02, Mon), 2168 (L02, Mon), 2175 (L02, Tue), 2298 (L05, Mon)
Song, Juwon	1572 (H04, Wed)	Stapf, Stefanie	2250 (L03, Wed)	Strobl, Jonathan	2207 (L02, Wed), 2489 (M02, Tue)
Song, Kah Young	1765 (I04, Tue)	Stapleton, Joseph	682 (B02, Mon)	Stroe, Daniel	286 (A03, Sun), 532 (A03, Wed)
Song, Liang	2219 (L02, Thu)	Starikowsky, Andrey	1177 (D02, Mon)	Stroud, Rhonda	1871 (I05, Tue)
Song, Liang	2171 (L02, Mon)	Staser, John	1560 (H04, Tue)	Strukova, Galina	2378 (L06, Mon)
Song, Min-Kyu	420 (A03, Tue), 588 (A03, Thu), 761 (B04, Mon), 2584 (Z01, Tue), 2594 (Z01, Tue)	Stassen, Ivo	1220 (E01, Wed)	Struyf, Herbert	1251 (E02, Wed)
Song, Min-Kyu	301 (A03, Mon), 2596 (Z01, Tue), 2599 (Z01, Tue)	Staub, Jason	434 (A03, Tue)	Stuart, Callie	1038 (B09, Tue)
Song, Rak-Hyun	1117 (C02, Mon)	Stavila, Vitalie	2369 (L06, Mon)	Stubb, Natalie	2611 (Z01, Tue)
Song, Seung-Wan	378 (A03, Tue), 553 (A03, Wed)	Stavitski, Eli	316 (A03, Mon)	Stubbs, Joanne	2109 (L01, Mon)
Song, Wooseok	865 (B06, Tue)	Staykov, Aleksandar	650 (B01, Mon), 695 (B03, Tue)	Sturm, Johannes	246 (A03, Sun)
Song, Xiong	334 (A03, Mon)	Stechel, Ellen	1648 (I03, Mon)	Stuve, Eric	581 (A03, Thu), 2148 (L01, Wed)
Song, Xueyan	2361 (L05, Thu)	Steele, Leigh Anna	117 (A01, Tue), 122 (A01, Tue), 126 (A01, Tue), 275 (A03, Sun)	Su, Chen Yi	1422 (H01, Tue)
Song, Yang	1154 (D01, Tue), 2482 (M02, Mon)	Stefanelli, Manuela	997 (B08, Mon)	Su, Cheng-Yong	961 (B08, Sun), 970 (F08, Sun)
Song, Young Jae	838 (B06, Tue), 852 (B06, Tue)	Stefanoni, Matteo	1051 (C01, Mon)	Su, Chi-Cheung	570 (A03, Thu)
Song, Yujiang	965 (B08, Sun)	Stefanopoulou, Anna	368 (A03, Mon)	Su, Dong	2174 (L02, Mon), 2184 (L02, Tue)
Soo, Yun Liang	1708 (I03, Thu)	Steinberg, Theodore	1115 (C02, Mon)	Su, Jin	1888 (I05, Wed)
Sood, Parveen	1324 (F02, Tue)	Steiner, Myles	1883 (I05, Wed)	Su, Liang	225 (A02, Wed)
Sopha, Hanna	1101 (C01, Wed), 1215 (E01, Wed), 2401 (L06, Tue)	Steingart, Daniel	137 (A01, Tue), 138 (A01, Tue), 608 (A04, Mon)	Su, Teng-Yu	836 (B06, Mon)
Sorescu, Dan	1941 (I06, Mon)	Steinhurst, Daniel	1633 (I02, Thu)	Su, Wei-Nien	2461 (M01, Thu)
Sort, Jordi	1293 (F01, Tue)	Steinrueck, Hans-Georg	429 (A03, Tue), 595 (A03, Thu)	Su, Xin	48 (A01, Mon)
Sorte, Eric	136 (A01, Tue)	Stephant, Nicolas	585 (A03, Thu)	Su, Zihang	2054 (K03, Tue)
Sossmeier, Kelly	1803 (I04, Wed)	Stephens, Ifan	2226 (L02, Thu), 2287 (L04, Tue), 2316 (L05, Tue)	Suarez, Sophia	129 (A01, Tue), 2521 (Z01, Tue)
Soto, Fernando	277 (A03, Sun)	Stephens, Jamal	119 (A01, Tue)	Subjakova, Veronika	2629 (Z02, Wed)
Sottos, Nancy	1956 (I06, Tue)	Stephenson, Corey	2080 (K03, Thu)	Subramaniam, Akshay	1326 (F02, Tue), 1332 (F02, Tue), 1348 (F02, Wed)
Sotzing, Gregory	29 (A01, Mon)	Sterckx, Peter	1040 (B09, Tue)	Subramanian, Venkat	165 (A01, Thu), 1325 (F02, Tue), 1326 (F02, Tue), 1331 (F02, Tue), 1332 (F02, Tue), 1340 (F02, Tue), 1343 (F02, Wed), 1348 (F02, Wed), 1350 (F02, Wed), 1354 (F02, Wed), 1356 (F02, Wed), 1357 (F02, Wed)
Soucic, Hanna	618 (A04, Mon)	Stergiopoulos, Vaios	1779 (I04, Wed)	Subramanian Parimalam, Bharathy	555 (A03, Wed)
Soures, Nicholas	1380 (G01, Tue)	Stern, Ilan	629 (B01, Sun)	Suegama, Patricia	1309 (F01, Tue)
Sow, Pradeep	2136 (L01, Wed)	Stetter, Joseph	2417 (M01, Tue), 2418 (M01, Tue)	Suga, Seiji	2029 (K01, Mon)
Spadaccini, Christopher	2366 (L06, Mon)	Stettner, Jochim	2118 (L01, Tue)	Suganthan, Bavithira	2053 (K03, Tue)
Spangenberg, Jeffrey	605 (A04, Mon), 616 (A04, Mon)	Stevens, Garrison	859 (B06, Tue)	Sugawa, Shigetoshi	2416 (M01, Tue)
Sparks, Taylor	1819 (I04, Thu), 2639 (Z03, Wed)	Stevens, Tyler	2627 (Z02, Wed)	Sugawara, Seiho	1809 (I04, Wed), 1810 (I04, Wed)
Specht, Petra	1406 (H01, Mon)	Stevenson, Jeffrey	1599 (I02, Wed)	Sugawara, Vinsensia	362 (A03, Mon), 416 (A03, Tue)
Spendelow, Jacob	1719 (I04, Sun), 2342 (L05, Wed)	Stevenson, Keith	1675 (I03, Tue), 2016 (I07, Tue), 2024 (K01, Mon)	Sugii, Nobuyuki	2414 (M01, Tue)
Spingler, Franz	34 (A01, Mon), 246 (A03, Sun)	Stevenson, Steven	805 (B05, Wed)	Sugimoto, Hiroshi	1160 (D01, Tue)
Spinu-Zaulet, Adnana	639 (B01, Sun)	Stewart, Matthew	2465 (M01, Thu)	Sugimoto, Manabu	955 (B07, Thu)
Spoerke, Erik	209 (A02, Tue), 235 (A02, Wed), 2381 (L06, Mon)	Stiaszny, Barbara	488 (A03, Wed)	Sugimoto, Wataru	2227 (L02, Thu)
Sporer, Ryan	1368 (G01, Mon)	Stiber, Svenja	15 (A01, Sun)	Sugiyama, Masaru	227 (A02, Wed)
Spormann, Alfred	1615 (I02, Wed)	Stickle, William	446 (A03, Wed), 497 (A03, Wed), 1697 (I03, Wed)	Suh, Sang-Jin	2445 (M01, Wed)
Spree, Lukas	815 (B05, Thu)	Stickney, John	2098 (L01, Mon), 2099 (L01, Mon), 2203 (L02, Wed)	Sui, Pang-Chieh	1968 (I06, Tue)
Sprenkle, Vincent	26 (A01, Mon), 207 (A02, Tue), 210 (A02, Tue), 216 (A02, Wed), 232 (A02, Wed), 234 (A02, Wed), 239 (A02, Thu), 241 (A02, Thu), 243 (A02, Thu), 453 (A03, Wed)	Stievano, Lorenzo	602 (A03, Thu)	Sukesan, Revathi	1483 (H03, Mon), 1487 (H03, Mon), 1515 (H03, Tue)
Sreetama, Ghosh	1831 (I05, Sun)	Stimming, Ulrich	222 (A02, Wed), 381 (A03, Tue), 2026 (K01, Mon), 2055 (K03, Tue), 2274 (L04, Mon)	Sul, Ji Hwan	625 (B01, Sun)
Sridhar, Narasi	1053 (C01, Mon)	Stitt, Camilla	1042 (C01, Mon)	Sul, Ji-Hwan	657 (B01, Tue)
Srinivas, B.	2441 (M01, Wed)	Stobinski, Leszek	2302 (L05, Mon), 2341 (L05, Wed)	Sullivan, Morgan	1039 (B09, Tue)
Srinivasan, Raghu	1057 (C01, Tue)	Stoerzinger, Kelsey	2103 (L01, Mon)	Suman, Rathod	221 (A02, Wed)
Srinivasan, Ramanathan	1360 (F02, Thu), 2115 (L01, Tue)	Stojanovic, Aleksandra	1272 (F01, Mon)	Sun, Chengjun	425 (A03, Tue)
Srinivasan, Venkat	59 (A01, Mon), 175 (A01, Thu), 176 (A01, Thu), 265 (A03, Sun)	Stolar, Drew	1359 (F02, Thu)	Sun, Fu	477 (A03, Wed)
St-Pierre, Jean	1588 (I01, Wed)	Stoldt, Conrad	38 (A01, Mon)	Sun, Fuxia	1637 (I03, Mon)
Stadermann, Michael	192 (A02, Tue), 1284 (F01, Tue), 1610 (I02, Wed), 2385 (L06, Tue)	Stone, Robert	1667 (I03, Tue)	Sun, Ke	1923 (I05, Thu)
Stadie, Nicholas	1137 (C02, Wed)	Stoner, Brian	1308 (F01, Tue)	Sun, Ke	316 (A03, Mon)
Stafford, Christopher	1987 (I06, Wed)	Strambini, Lucanos	1385 (G01, Tue), 1386 (G01, Tue)	Sun, Shi-Gang	408 (A03, Tue), 2196 (L02, Wed), 2215 (L02, Wed), 2312 (L05, Tue)
Stafford, Gery	1981 (I06, Wed), 1985 (I06, Wed), 1987 (I06, Wed)	Strand, Dee	566 (A03, Wed), 571 (A03, Thu)	Sun, Shouheng	1719 (I04, Sun)
Stahl, Shannon	2048 (K01, Tue), 2086 (K03, Thu)	Strand, Michael	1260 (E02, Wed)	Sun, Shuhui	1497 (H03, Tue)
Stamenkovic, Vojislav	633 (B01, Sun), 1696 (I03, Wed), 1699 (I03, Wed), 2161 (L02, Mon), 2168 (L02, Mon), 2175 (L02, Tue), 2298 (L05, Mon)	Strano, Michael	648 (B01, Mon), 671 (B02, Mon), 731 (B03, Wed), 888 (B06, Thu), 891 (B06, Thu), 1564 (H04, Wed), 2273 (L04, Mon), 2415 (M01, Tue), 2617 (Z02, Wed)	Sun, Tingting	2380 (L06, Mon)
Stamper, Harlan	1382 (G01, Tue)	Strasser, Peter	1666 (I03, Tue), 2180 (L02, Tue)	Sun, Wei	520 (A03, Wed)
		Strauf, Stefan	724 (B03, Wed)	Sun, Xiao-Guang	516 (A03, Wed)
		Strbac, Svetlana	2229 (L02, Thu)	Sun, Yang-Kook	303 (A03, Mon), 311 (A03, Mon), 313 (A03, Mon), 370 (A03, Mon), 505 (A03, Wed), 506 (A03, Wed), 525 (A03, Wed), 527 (A03, Wed), 540 (A03, Wed), 543 (A03, Wed), 565 (A03, Wed), 577 (A03, Thu)
		Strehle, Benjamin	63 (A01, Mon), 376 (A03, Tue)		
		Stripe, Benjamin	269 (A03, Sun)		

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Sun, Zhenci	1575 (H04, Wed)	Takase, Mai	935 (B07, Wed), 1879 (I05, Wed), 2144 (L01, Wed)	Tefashe, Ushula	2117 (L01, Tue)
Sundar, Rochita	2133 (L01, Tue)	Takase, Masayoshi	978 (B08, Sun)	Tefferi, Mattewos	29 (A01, Mon)
Sundaram, Kalpathy	2538 (Z01, Tue), 2601 (Z01, Tue), 2638 (Z03, Wed)	Takahashi, Mai	935 (B07, Wed), 1879 (I05, Wed), 2144 (L01, Wed)	Tei, Go	557 (A03, Wed)
Sunde, Svein	1315 (F01, Wed), 1644 (I03, Mon), 1668 (I03, Tue), 1737 (I04, Sun), 1806 (I04, Wed), 2224 (L02, Thu), 2489 (M02, Tue), 2564 (Z01, Tue)	Takei, Kuniharu	1494 (H03, Mon)	Tembhurne, Saurabh	1823 (I05, Sun)
Sunde, Svein	1780 (I04, Wed)	Takenaka, Mitsuru	1457 (H02, Mon)	Temeche, Eleni	443 (A03, Wed), 2595 (Z01, Tue)
Sung, Changhun	366 (A03, Mon)	Takenobu, Taishi	957 (B07, Thu)	Tench, D	1316 (F01, Wed)
Sung, Hyun Ho	1437 (H01, Tue)	Taketsugu, Tetsuya	2189 (L02, Tue)	Tender, Leonard	2259 (L03, Thu)
Sung, Yung-Eun	2352 (L05, Wed)	Takeuchi, Norimitsu	1770 (I04, Tue)	Tender, Leonard	2070 (K03, Wed), 2244 (L03, Wed)
Sunkara, Mahendra	951 (B07, Thu), 1178 (D02, Mon), 1885 (I05, Wed)	Takeuchi, Shugo	1879 (I05, Wed)	Tenhaff, Wyatt	8 (A01, Sun)
Suntvich, Jin	1604 (I02, Wed), 1782 (I04, Wed), 2211 (L02, Wed)	Talebi-Esfandarani, Majid	375 (A03, Tue)	Tenhaff, Wyatt	7 (A01, Sun), 9 (A01, Sun), 11 (A01, Sun), 270 (A03, Sun), 348 (A03, Mon), 522 (A03, Wed)
Surca, Angelja	1073 (C01, Tue), 1088 (C01, Wed)	Talianker, Michael	310 (A03, Mon)	Teo, Ken	847 (B06, Tue)
Surendran, Sajitha	1442 (H01, Wed)	Talin, Albert	2369 (L06, Mon)	Tepper, Katelyn	805 (B05, Wed)
Suresh, Mamidi	1032 (B09, Sun)	Tallo, Indrek	652 (B01, Tue), 1723 (I04, Sun), 2308 (L05, Mon)	Teppor, Patrick	1723 (I04, Sun), 2308 (L05, Mon)
Susac, Darija	1816 (I04, Thu)	Tamasauskaite-Tamasiunaite, Loretta	1268 (E02, Wed), 1787 (I04, Wed)	Teramura, Kentaro	921 (B07, Wed), 1836 (I05, Sun)
Susai, Francis	310 (A03, Mon)	Tamm, Aile	1475 (H02, Tue)	Teranishi, Toshiharu	926 (B07, Wed)
Susanto, Dieky	494 (A03, Wed)	Tammeveski, Kaido	2315 (L05, Tue)	Terrani, Kurt	1125 (C02, Tue)
Sutar, Surajit	842 (B06, Tue)	Tamura, Kazuhisa	2120 (L01, Tue)	Teryn, Herman	1258 (E02, Wed), 1265 (E02, Wed)
Suttmiller, David	2002 (I07, Mon), 2013 (I07, Tue)	Tan, Haiyan	1230 (E02, Mon)	Tertykh, V	1149 (D01, Mon)
Suzer, Sefik	2107 (L01, Mon), 2152 (L01, Wed)	Tan, Hongjin	252 (A03, Sun)	Teshima, Katsuya	1913 (I05, Thu)
Suzuki, Akiyoshi	489 (A03, Wed)	Tan, Hongyi	1657 (I03, Mon)	Tessler, Leandro	1155 (D01, Tue)
Suzuki, Sayaka	1913 (I05, Thu)	Tan, Jian	64 (A01, Mon)	Teuff, Tobias	63 (A01, Mon)
Suzuki, Takahiro	2106 (L01, Mon)	Tan, Jinwang	600 (A03, Thu)	Thackeray, Michael	442 (A03, Wed)
Suzuki, Takahisa	1581 (I01, Wed)	Tanabe, Tadao	1096 (C01, Wed)	Thanapisitikul, Piyathip	6 (A01, Sun), 39 (A01, Mon)
Svensson, Ann	2588 (Z01, Tue)	Tanabe, Toyokazu	2512 (Z01, Tue), 2513 (Z01, Tue), 2514 (Z01, Tue)	Thangavel, Naresh kumar	148 (A01, Wed), 515 (A03, Wed)
Sverdlov, Viktor	1477 (H02, Tue)	Tanaka, Hiroki	2029 (K01, Mon)	Thapa, Surendra	2347 (L05, Wed)
Swain, Greg	1019 (B08, Tue)	Tanaka, Hisaaki	957 (B07, Thu)	Theodosiou, Pavlina	2255 (L03, Thu)
Swallow, Jessica	1933 (I06, Mon)	Tanaka, Kentaro	1004 (B08, Tue)	Therien, Michael	727 (B03, Wed)
Swanson, Clifford	2257 (L03, Thu)	Tang, Chiu	376 (A03, Tue)	Thevuthasan, Suntharampillai	298 (A03, Mon)
Swavey, Shawn	1009 (B08, Tue)	Tang, Fujian	2407 (M01, Tue)	Thieme, Juergen	316 (A03, Mon), 1077 (C01, Tue)
Swayamprabha, Sujith	1427 (H01, Tue)	Tang, Hao-Lun	1238 (E02, Tue)	Thimm, Jan	576 (A03, Thu)
Sweet, Andrew	1693 (I03, Wed)	Tang, Haochun	1204 (E01, Tue)	Thivel, Pierre-Xavier	118 (A01, Tue)
Swei, Abdurazag	1635 (I02, Thu)	Tang, I-Tseng	2509 (M02, Tue)	Thomas, John	1946 (I06, Tue)
Swider-Lyons, Karen	1589 (I01, Wed), 1727 (I04, Sun)	Tang, Jih-Yu	33 (A01, Mon)	Thomas, K. R.	1427 (H01, Tue)
Swieca, Adam	1307 (F01, Tue)	Tang, Maureen	1358 (F02, Thu)	Thomas, Michael	910 (B07, Tue)
Syakam, Nagaraju	867 (B06, Wed)	Tang, Ming	177 (A01, Thu)	Thomas, Milana	77 (A01, Mon)
Symes, Mark	1706 (I03, Thu)	Tang, Ming	2598 (Z01, Tue)	Thomas, Wren	676 (B02, Mon)
Synnatschke, Kevin	875 (B06, Wed)	Tang, Qiaowei	1619 (I02, Wed)	Thomassen, Magnus	2564 (Z01, Tue)
Szabłowski, Łukasz	33 (A01, Mon)	Tang, Shin-Yi	836 (B06, Mon)	Thommes, Matthias	2374 (L06, Mon)
Szczęśniak, Arkadiusz	33 (A01, Mon)	Tang, Yun	390 (A03, Tue)	Thompson, Andrea	247 (A03, Sun)
Szendrei, Alex	1819 (I04, Thu)	Tang, Zhijiang	1760 (I04, Tue)	Thompson, Annelise	877 (B06, Wed)
Szeto, Nathaniel	145 (A01, Wed)	Tani, Yosuke	971 (B08, Mon)	Thompson, Jonathan	2059 (K03, Tue), 2142 (L01, Wed), 2633 (Z02, Wed)
Szkopek, Thomas	883 (B06, Wed)	Tanida, Hajime	1809 (I04, Wed), 1810 (I04, Wed), 2210 (L02, Wed)	Thompson, Matthew	93 (A01, Mon)
Szudlarek, Aleksandra	1530 (H03, Wed)	Taniguchi, Izumi	510 (A03, Wed), 2563 (Z01, Tue), 2586 (Z01, Tue)	Thompson, Travis	479 (A03, Wed)
		Tanim, Tanvir	121 (A01, Tue)	Thomson, Seamus	2506 (M02, Tue)
		Taniyama, Akira	1096 (C01, Wed)	Thorbjomsen, Kristian	2564 (Z01, Tue)
		Tao, Chenggang	818 (B05, Thu)	Thornton, Geoff	1858 (I05, Tue)
		Tardif, Samuel	248 (A03, Sun)	Thorpe, Steven	1690 (I03, Wed), 1712 (I03, Thu)
		Tarverne, Tyler	395 (A03, Tue)	Thostenson, James	1308 (F01, Tue)
		Tasca, Federico	2187 (L02, Tue)	Thundat, Thomas	2409 (M01, Tue), 2479 (M02, Mon), 2480 (M02, Mon), 2483 (M02, Mon)
		Tatar, Greg	1123 (C02, Tue), 1137 (C02, Wed)	Thygesen, Kristian	1912 (I05, Thu)
		Tatara, Ryoichi	578 (A03, Thu), 2276 (L04, Mon)	Tian, Bozhi	1519 (H03, Wed), 1536 (H04, Mon)
		Tatebayashi, Jun	1401 (H01, Mon)	Tian, Chengbo	916 (B07, Tue)
		Tatsuma, Tetsu	931 (B07, Wed)	Tian, Mengkun	2631 (Z02, Wed)
		Taushanoff, Stefanie	1245 (E02, Tue)	Tian, Na	2196 (L02, Wed), 2215 (L02, Wed)
		Tavakoli Mehrabadi, Bahareh Alsadat	1278 (F01, Mon)	Tian, Renxiu	2183 (L02, Tue)
		Tavares, Ana	1625 (I02, Thu)	Tian, Ryan	2399 (L06, Tue)
		Tavassol, Hadi	1982 (I06, Wed)	Tiano, Sophia	214 (A02, Tue)
		Tay, Stephen	1042 (C01, Mon)	Ticianelli, Edson	2166 (L02, Mon)
		Taylor, Audrey	375 (A03, Tue), 1638 (I03, Mon), 1673 (I03, Tue), 2375 (L06, Mon)	Timbillah, Simon	2153 (L01, Wed)
		Taylor, E	1127 (C02, Tue), 1134 (C02, Tue), 1286 (F01, Tue), 1316 (F01, Wed), 1321 (F01, Wed), 1322 (F01, Wed), 2149 (L01, Wed), 2357 (L05, Thu)	Timmermans, Marina	1213 (E01, Wed), 1216 (E01, Wed)
		Taylor, Nathan	483 (A03, Wed)	Timofeeva, Elena	35 (A01, Mon)
		Teabnamang, Pemika	52 (A01, Mon)	Ting, Yi-Hsin	1314 (F01, Wed)
		Teeter, Glenn	1687 (I03, Wed)	Tiwari, Devendra	1925 (I05, Thu)
				Tizzoni, Anna Chiara	212 (A02, Tue), 213 (A02, Tue)
				Toguchi, Masachika	2550 (Z01, Tue)

T

Tabaka, Amber	2574 (Z01, Tue)
Taborelli, Mauro	1261 (E02, Wed)
Tachibana, Koichiro	1204 (E01, Tue)
Tachikawa, Naoki	227 (A02, Wed)
Tachikawa, Takashi	912 (B07, Tue)
Tada, Eiji	1056 (C01, Tue), 1058 (C01, Tue), 1059 (C01, Tue)
Tada, Tomofumi	958 (B07, Thu)
Tadaki, Daisuke	2283 (L04, Mon)
Tadger, Marko	1420 (H01, Tue)
Tai, Kuo-Lun	1448 (H01, Wed)
Tai, Tse-Yu	1514 (H03, Tue)
Tai, Yian	1671 (I03, Tue)
Tajima, Tomoyuki	635 (B01, Sun)
Takacs, Christopher	429 (A03, Tue)
Takagi, Shinichi	1457 (H02, Mon)
Takaguchi, Yutaka	635 (B01, Sun)
Takahashi, Hideyuki	2634 (Z02, Wed)
Takahashi, Hideyuki	2517 (Z01, Tue)
Takai, Shigeomi	514 (A03, Wed), 2640 (Z03, Wed)
Takakura, Ryohei	1869 (I05, Tue)
Takamura, Yasuhiro	1943 (I06, Mon)
Takano, Ken	2047 (K01, Tue)
Takao, Naoki	1809 (I04, Wed), 1810 (I04, Wed)

Author Index

Author	Abs No.
Tohji, Kazuyuki	2517 (Z01, Tue)
Toia, Fabrizio	1385 (G01, Tue)
Tokieda, Hiroyuki	1050 (C01, Mon)
Tokuda, Shoichi	944 (B07, Thu)
Tolbert, Sarah	145 (A01, Wed), 2388 (L06, Tue)
Tolchard, Julian	2564 (Z01, Tue)
Tomczak, Yoann	842 (B06, Tue)
Tomie, Mineyoshi	1255 (E02, Wed)
Tomita, Ikuyoshi	2025 (K01, Mon), 2028 (K01, Mon)
Tomita, Koji	2644 (Z03, Wed)
Toney, Michael	429 (A03, Tue), 595 (A03, Thu), 599 (A03, Thu), 1042 (C01, Mon), 1348 (F02, Wed)
Tong, YuYe	136 (A01, Tue)
Tongay, Sefaattin	868 (B06, Wed)
Torimoto, Tsukasa	950 (B07, Thu), 1886 (I05, Wed)
Tornheim, Adam	472 (A03, Wed), 568 (A03, Thu), 570 (A03, Thu)
Torres, Alfredo	1146 (D01, Mon)
Torres, Ana	277 (A03, Sun)
Torres, Maria	804 (B05, Wed), 817 (B05, Thu)
Torres, Monica	2068 (K03, Wed)
Torres, Tomas	798 (B05, Wed), 982 (B08, Mon)
Torres-Castro, Loraine	117 (A01, Tue), 122 (A01, Tue), 126 (A01, Tue), 275 (A03, Sun)
Tortorelli, Dan	192 (A02, Tue)
Toshimitsu, Fumiuyuki	695 (B03, Tue), 718 (B03, Wed)
Toshiyoshi, Hiroshi	1470 (H02, Tue)
Tou, Pei-Ting	1398 (G01, Tue), 1399 (G01, Tue)
Toupin, Mathieu	476 (A03, Wed)
Tozier, Dylan	252 (A03, Sun)
Tran, Binh	403 (A03, Tue)
Tran, Nam	77 (A01, Mon), 78 (A01, Mon)
Tran, Wendy	2404 (M01, Tue)
Tran-Van, Pierre	2271 (L04, Mon)
Tranchot, Alix	473 (A03, Wed)
Trasatti, Stefano	2258 (L03, Thu)
Trask, Stephen	350 (A03, Mon), 464 (A03, Wed), 475 (A03, Wed)
Treich, Gregory	29 (A01, Mon)
Trembacki, Bradley	134 (A01, Tue), 135 (A01, Tue), 173 (A01, Thu)
Tretiak, Sergei	719 (B03, Wed)
Treufeld, Imre	2207 (L02, Wed)
Trevey, James	607 (A04, Mon)
Tribollet, Bernard	2466 (M01, Thu)
Trieu, Vuong	2504 (M02, Tue)
Trifkovic, Milana	1287 (F01, Tue)
Trifkovic, Vladimir	1677 (I03, Tue)
Triyoso, Dina	1368 (G01, Mon)
Tromstad, Zachary	1987 (I06, Wed)
Tryk, Donald	2210 (L02, Wed)
Tsai, An-Ni	2620 (Z02, Wed)
Tsai, Chia-Jung	1446 (H01, Wed)
Tsai, Chih Long	480 (A03, Wed)
Tsai, Hsin-Chang	1432 (H01, Tue)
Tsai, Liang-Feng	2621 (Z02, Wed)
Tsai, Min Chen	1081 (C01, Tue), 1249 (E02, Tue)
Tsai, Ming Hung	1081 (C01, Tue)
Tsai, Mu-Tsun	1163 (D01, Tue)
Tsai, Ping-Chen	1394 (G01, Tue)
Tsai, Shu-Yi	33 (A01, Mon)
Tsai, Vincent	1472 (H02, Tue)
Tsai, You-Ting	2509 (M02, Tue)
Tsang, Shik Chi Edman	1708 (I03, Thu)
Tsao, Yu-Hsiang	1501 (H03, Tue)
Tseng, Hsiu-Yang	2503 (M02, Tue)
Tseng, Ko-Kai	1571 (H04, Wed)
Tseng, Po-Chih	1283 (F01, Tue)
Tseng, Tseung-Yuen	835 (B06, Mon)
Tsipas, Polichronis	843 (B06, Tue)
Tsirlina, Galina	2194 (L02, Tue), 2318 (L05, Tue)

Author	Abs No.
Tsoi, Stanislav	1633 (I02, Thu)
Tsoutsou, Dimitra	843 (B06, Tue)
Tsuchida, Shuzo	2517 (Z01, Tue)
Tsuda, Takashi	2513 (Z01, Tue), 2514 (Z01, Tue)
Tsunashima, Katsuhiko	2027 (K01, Mon)
Tsuneishi, Chiaki	2025 (K01, Mon)
Tsurumaki, Yumiko	1056 (C01, Tue)
Tsushima, Shohji	2106 (L01, Mon)
Tsutsui, Kazuo	1411 (H01, Mon), 1422 (H01, Tue), 1440 (H01, Wed)
Tübke, Jens	1270 (F01, Mon)
Tucci, Matteo	2258 (L03, Thu)
Tucker, Michael	25 (A01, Mon), 195 (A02, Mon)
Tulej, Marek	1259 (E02, Wed)
Tuller, Harry	1933 (I06, Mon), 1944 (I06, Mon), 2321 (L05, Tue)
Tulodziecki, Michal	578 (A03, Thu), 2276 (L04, Mon)
Tung, Li-Chun	1421 (H01, Tue)
Turner, John	1901 (I05, Thu)
Turney, Damon	115 (A01, Mon), 2572 (Z01, Tue)
Turney, Damon	53 (A01, Mon), 140 (A01, Tue)
Turvey, Mackenzie	245 (A03, Sun)
Tutar, Secil	2256 (L03, Thu)
Tüysüz, Harun	1874 (I05, Wed)
Tyagi, Ankit	160 (A01, Wed)
Tylczak, Joseph	1067 (C01, Tue), 1105 (C02, Mon), 1106 (C02, Mon)

U

Uberuaga, Blas	2598 (Z01, Tue)
Uchida, Hiroyuki	2210 (L02, Wed), 2305 (L05, Mon)
Uchimar, Masahiro	2475 (M02, Mon)
Uchimoto, Yoshiharu	1809 (I04, Wed), 1810 (I04, Wed), 2515 (Z01, Tue), 2585 (Z01, Tue)
Uchimura, Shunsuke	718 (B03, Wed)
Uchiyama, Tomoki	1809 (I04, Wed), 1810 (I04, Wed), 2515 (Z01, Tue), 2585 (Z01, Tue)
Uda, Takushi	721 (B03, Wed)
Uddin, Jasim	252 (A03, Sun), 426 (A03, Tue)
Uematsu, Masayoshi	514 (A03, Wed)
Ueno, Hiroshi	821 (B05, Thu)
Ueno, Kosei	925 (B07, Wed), 1869 (I05, Tue)
Ueno, Tomo	1372 (G01, Mon)
Ueyama, Nozomu	1378 (G01, Tue)
Ueyama, Yasuhiro	2517 (Z01, Tue)
Uhlig, Benjamin	1254 (E02, Wed)
Uhlik, Filip	807 (B05, Wed)
Ulgut, Burak	1355 (F02, Wed), 2107 (L01, Mon), 2152 (L01, Wed)
Ullman, Andrew	2369 (L06, Mon)
Ulsh, Michael	1794 (I04, Wed)
Umapathi, Siddesh	1635 (I02, Thu)
Underwood, Robert	445 (A03, Wed)
Ung, David	1862 (I05, Tue)
Unmüssig, Tobias	1730 (I04, Sun)
Uno, Shigeyasu	1471 (H02, Tue)
Unveroglu, Begum	2102 (L01, Mon)
Uosaki, Kohei	946 (B07, Thu), 2189 (L02, Tue)
Urban, Nathaniel	2566 (Z01, Tue), 2569 (Z01, Tue)
Urbancok, Dejan	1629 (I02, Thu)
Uren, Mike	1416 (H01, Tue)
Usrey, Monica	2 (A01, Sun), 573 (A03, Thu)
Ustarroz, Jon	1207 (E01, Wed), 1224 (E02, Mon), 1258 (E02, Wed), 1265 (E02, Wed)
Utgikar, Vivek	112 (A01, Mon), 1075 (C01, Tue), 1279 (F01, Mon), 2555 (Z01, Tue)
Uzundal, Can Berk	1355 (F02, Wed), 2107 (L01, Mon)

Author	Abs No.
V	
Vacandio, Florence	362 (A03, Mon), 416 (A03, Tue)
Vaccaro, L	1149 (D01, Mon)
Vachaparambil, Kurian	1366 (F02, Thu)
Vadnala, Sudharshan	2582 (Z01, Tue)
Vahedi, Vahid	1180 (D02, Mon)
VahidMohammadi, Armin	347 (A03, Mon)
Vaid, Rakesh	2487 (M02, Mon)
Vajrala, Venkata	2130 (L01, Tue)
Vakarin, Vladyslav	1173 (D01, Wed)
Valdes-Espinosa, Honorio	581 (A03, Thu)
Valdez, Alejandra	550 (A03, Wed), 556 (A03, Wed)
Valdez, James	2598 (Z01, Tue)
Valenti, Giovanni	813 (B05, Wed), 854 (B06, Tue), 2084 (K03, Thu)
Valero, Anthony	147 (A01, Wed)
Vamvakeros, Antonis	1817 (I04, Thu)
Van Aken, Katherine	93 (A01, Mon)
Van Bezouw, Stein	751 (B03, Thu)
van de Sanden, M. C. M.	1908 (I05, Thu)
Van den Bergh, Krista	1265 (E02, Wed)
Van der Ven, Anton	168 (A01, Thu), 1946 (I06, Tue)
van der Vliet, Dennis	1637 (I03, Mon)
van Haren, Wessel	189 (A02, Tue)
Van Vliet, Krystyn	1933 (I06, Mon), 1945 (I06, Tue), 1958 (I06, Tue)
Vanamurthy, Laks	1368 (G01, Mon)
Varcoe, John	1748 (I04, Mon)
Varlam, Mihai	639 (B01, Sun)
Varley, Joel	1855 (I05, Tue)
Vasdev, Rajeshwar	2022 (K01, Mon)
Vasin, A	1149 (D01, Mon)
Vaskevich, Alexander	1242 (E02, Tue)
Vasquez, Mariana	2091 (K03, Thu)
Vatamanu, Jenel	2286 (L04, Tue)
Vaughy, John	67 (A01, Mon), 80 (A01, Mon), 259 (A03, Sun), 260 (A03, Sun), 291 (A03, Mon)
Vayssieres, Lionel	1857 (I05, Tue)
Vedharathinam, Vedasri	622 (B01, Sun), 1610 (I02, Wed)
Vegge, Tejs	401 (A03, Tue), 1607 (I02, Wed), 1677 (I03, Tue), 2270 (L04, Mon), 2287 (L04, Tue)
Veith, Gabriel	8 (A01, Sun), 38 (A01, Mon), 49 (A01, Mon), 469 (A03, Wed)
Veith, Gabriel	9 (A01, Sun), 2631 (Z02, Tue)
Velichenko, Alexander	1247 (E02, Tue)
Velikokhatnyi, Oleg	6 (A01, Sun), 60 (A01, Mon), 1640 (I03, Mon)
Velizhanin, Kirill	727 (B03, Wed)
Venegas, Diego	2187 (L02, Tue)
Venkatraman, Kailash	1218 (E01, Wed)
Ventzek, Peter	1185 (D02, Mon)
Verbrugge, Mark	169 (A01, Thu), 267 (A03, Sun), 465 (A03, Wed)
Verde, Michael	183 (A02, Tue)
Vereecken, Philippe	1213 (E01, Wed), 1216 (E01, Wed), 1264 (E02, Wed)
Vereecken, Philippe	1210 (E01, Wed), 1251 (E02, Wed)
Verguts, Ken	846 (B06, Tue)
Verma, Ankit	185 (A02, Tue)
Verma, Ankit	251 (A03, Sun)
Verma, Sumit	1630 (I02, Thu)
Vernardou, D	103 (A01, Mon)
Vesborg, Peter	1912 (I05, Thu)
Vetrone, Fiorenzo	1157 (D01, Tue)
Vezzoli, Andrea	2275 (L04, Mon)
Vezzù, Ketì	1758 (I04, Tue), 2289 (L04, Tue), 2334 (L05, Wed)
Vickers, James	1646 (I03, Mon)
Vidal, Judith	1114 (C02, Mon)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Vidal, Sara	799 (B05, Wed)	Walmsley, Joshua	2129 (L01, Tue)	Wang, Kuangye	1571 (H04, Wed), 1576 (H04, Wed)
Viggiano, Rocco	575 (A03, Thu)	Walsh, Adrian	1191 (D02, Mon)	Wang, Lan	1751 (I04, Mon)
Vigneron, Jackie	1412 (H01, Mon)	Walsh, James	1175 (D02, Mon)	Wang, Lei	355 (A03, Mon)
Vigneron, Jacky	2151 (L01, Wed)	Walter, Eric	239 (A02, Thu)	Wang, Lei	1631 (I02, Thu)
Vijapur, Santosh	1127 (C02, Tue), 1286 (F01, Tue), 2357 (L05, Thu)	Walter, Xavier Alexis	2260 (L03, Thu), 2266 (L03, Thu)	Wang, Li	15 (A01, Sun)
Vijaya Sankar, Kalimuthu	332 (A03, Mon)	Wan, Gang	2328 (L05, Tue)	Wang, Lianqin	1748 (I04, Mon)
Vik, Ryan	1007 (B08, Tue)	Wan, Min	113 (A01, Mon)	Wang, Lin-Wang	1687 (I03, Wed)
Villarreal, Jahaziel	414 (A03, Tue), 550 (A03, Wed)	Wan, Ting	2642 (Z03, Wed)	Wang, Maoyu	1825 (I05, Sun)
Villegas, Michael	162 (A01, Wed)	Wang, Aurelia	1533 (H04, Mon)	Wang, Mei-Ya	1047 (C01, Mon)
Vinado, Carolina	499 (A03, Wed)	Wang, Bo	745 (B03, Thu)	Wang, Mengjiao	2105 (L01, Mon)
Vinckeviute, Julija	168 (A01, Thu), 1946 (I06, Tue)	Wang, Caiyun	834 (B06, Mon), 2235 (L02, Thu)	Wang, Miao	1296 (F01, Tue)
Vine, David	269 (A03, Sun)	Wang, Chao	2183 (L02, Tue)	Wang, Mike	483 (A03, Wed)
Vinet, Maud	1462 (H02, Mon)	Wang, Chen-Hao	2336 (L05, Wed), 2475 (M02, Mon)	Wang, Muqin	457 (A03, Wed)
Virkar, Anil	1819 (I04, Thu)	Wang, Chia-Ching	2137 (L01, Wed)	Wang, Pei-Chun	1549 (H04, Tue)
Virkar, Anil	2639 (Z03, Wed)	Wang, Chih-Wei	2622 (M01, Thu)	Wang, Pen-Cheng	284 (A03, Sun)
Virtanen, Sannakaisa	1041 (C01, Mon), 1044 (C01, Mon)	Wang, Chiu-Yen	2615 (Z02, Wed), 2620 (Z02, Wed)	Wang, Pingping	495 (A03, Wed)
Viry, Alvin	2390 (L06, Tue)	Wang, Chiu-yen	2614 (Z02, Wed), 2619 (Z02, Wed), 2621 (Z02, Wed), 2622 (Z02, Wed)	Wang, Qi	27 (A01, Mon)
Viswanathan, Venkatasubramanian	1281 (F01, Mon)	Wang, Chongmin	50 (A01, Mon), 374 (A03, Tue)	Wang, Rongyue	633 (B01, Sun), 1230 (E02, Mon), 2298 (L05, Mon)
Viswanathan, Vish	26 (A01, Mon)	Wang, Chongmin	307 (A03, Mon), 463 (A03, Wed)	Wang, Shanyu	206 (A02, Tue), 296 (A03, Mon), 499 (A03, Wed), 1195 (E01, Tue)
Vitale, Flavia	665 (B02, Sun)	Wang, Chuan	1543 (H04, Mon)	Wang, Shaofei	348 (A03, Mon)
Vivien, Laurent	1173 (D01, Wed)	Wang, Chunlei	162 (A01, Wed), 433 (A03, Tue), 658 (B01, Tue), 1028 (B09, Sun), 1043 (C01, Mon), 1069 (C01, Tue)	Wang, Shijing	1193 (D02, Mon)
Vizintin, Alen	256 (A03, Sun)	Wang, Chunru	826 (B05, Thu)	Wang, Shin-Li	1487 (H03, Mon), 1515 (H03, Tue)
Vo, Thanh	403 (A03, Tue), 438 (A03, Tue)	Wang, Chunsheng	418 (A03, Tue), 426 (A03, Tue), 520 (A03, Wed), 1199 (E01, Tue)	Wang, Song	891 (B06, Thu)
Vo, Truong-Giang	1671 (I03, Tue)	Wang, Chunya	619 (B01, Sun)	Wang, Suqing	334 (A03, Mon)
Vogel, Eric	629 (B01, Sun)	Wang, Dan	1127 (C02, Tue), 1286 (F01, Tue), 2357 (L05, Thu)	Wang, Taishan	786 (B05, Tue)
Vogel, John	247 (A03, Sun), 272 (A03, Sun)	Wang, Deyu	457 (A03, Wed)	Wang, Timothy	2369 (L06, Mon)
Voisin, Christophe	716 (B03, Wed), 722 (B03, Wed), 879 (B06, Wed), 892 (B07, Wed)	Wang, Donghai	831 (B06, Mon), 1233 (E02, Tue)	Wang, Ting-Yi	1184 (D02, Mon)
Volkan Demir, Hilmi	1152 (D01, Mon)	Wang, Dunwei	1839 (I05, Sun)	Wang, Wei	190 (A02, Tue), 207 (A02, Tue), 216 (A02, Wed), 239 (A02, Thu), 241 (A02, Thu), 243 (A02, Thu), 1902 (I05, Thu)
Vollert, Ivonne	700 (B03, Thu)	Wang, Fan	177 (A01, Thu)	Wang, Xiao	2103 (L01, Mon)
Von Lengerke, Quint	2490 (M02, Tue)	Wang, Fei	418 (A03, Tue), 520 (A03, Wed)	Wang, Xiaodong	2590 (Z01, Tue)
von Rudorff, Guido	2109 (L01, Mon)	Wang, Feng	917 (B07, Tue)	Wang, Xiaofeng	374 (A03, Tue), 2626 (Z02, Wed)
von Seggern, Heinz	2402 (L06, Mon)	Wang, Feng	1521 (H03, Wed)	Wang, Xiaohua	2319 (L05, Tue)
Vonk, Donald	1077 (C01, Tue)	Wang, Guan Jhong	1664 (I03, Tue)	Wang, Xiaolei	1716 (I03, Thu)
Voros, Marton	358 (A03, Mon)	Wang, Guanxiang	1672 (I03, Tue)	Wang, Xiaoxia	2191 (L02, Tue), 2342 (L05, Wed)
Voylov, Dmitry	49 (A01, Mon)	Wang, Haihui	334 (A03, Mon)	Wang, Xilian	1726 (I04, Sun)
Vrubel, Heron	179 (A02, Tue)	Wang, Haijiang	2001 (I07, Mon)	Wang, Xingfeng	193 (A02, Tue), 258 (A03, Sun)
Vuillemin, Bruno	1263 (E02, Wed)	Wang, Hailiang	1825 (I05, Sun)	Wang, Xudong	1492 (H03, Mon), 1566 (H04, Wed)
Vukaj, Frank	2529 (Z01, Tue)	Wang, Han	893 (B06, Thu)	Wang, Xuehang	1739 (I04, Mon)
Vukmirovic, Miomir	1728 (L01, Sun), 2171 (L02, Mon), 2230 (L02, Thu)	Wang, Hao	2335 (L05, Wed), 2532 (Z01, Tue)	Wang, Xuelong	312 (A03, Mon)
Vuong, Jiam	1982 (I06, Wed)	Wang, Hao	2578 (Z01, Tue)	Wang, Yan	1192 (D02, Mon), 1193 (D02, Mon)
Vuong, Katrina	2068 (K03, Wed)	Wang, Haosen	1605 (I02, Wed), 1624 (I02, Thu), 1919 (I05, Thu), 2233 (L02, Thu)	Wang, Yan	610 (A04, Mon)
		Wang, Haotian	1605 (I02, Wed), 1624 (I02, Thu), 1919 (I05, Thu), 2233 (L02, Thu)	Wang, Yang	45 (A01, Mon)
		Wang, Hong	910 (B07, Tue)	Wang, Yanjie	518 (A03, Wed)
		Wang, Hongmei	1838 (I05, Sun)	Wang, Yaofeng	792 (B05, Wed)
		Wang, Hsin	9 (A01, Sun)	Wang, Yi	2253 (L03, Wed), 2430 (M01, Wed)
		Wang, Hsing-Lin	630 (B01, Sun)	Wang, Yi-Chung	836 (B06, Mon)
		Wang, Huanhuan	450 (A03, Wed)	Wang, Yi-Jung	2327 (L05, Tue)
		Wang, Hui	451 (A03, Wed)	Wang, Yijia	2501 (M02, Tue)
		Wang, Huimin	619 (B01, Sun)	Wang, Yikai	1953 (I06, Tue)
		Wang, Jeng-Han	2455 (M01, Wed), 2463 (M01, Thu)	Wang, Ying	1973 (I06, Tue)
		Wang, Jia	2184 (L02, Tue), 2219 (L02, Thu)	Wang, Yong	861 (B06, Tue)
		Wang, Jiang	2082 (K03, Thu)	Wang, Yong-Gang	493 (A03, Wed)
		Wang, Jiaping	336 (A03, Mon)	Wang, Yong-Jia	2137 (L01, Wed), 2459 (M01, Wed)
		Wang, Jingyang	373 (A03, Tue), 391 (A03, Tue)	Wang, Yongqiang	2598 (Z01, Tue)
		Wang, Jingyun	74 (A01, Mon)	Wang, Yu	415 (A03, Tue)
		Wang, Joseph	2443 (M01, Wed)	Wang, Yu-Cheng	2312 (L05, Tue)
		Wang, Jue	1811 (I04, Wed)	Wang, Yu-Lin	1483 (H03, Mon), 1485 (H03, Mon), 1487 (H03, Mon), 1514 (H03, Tue), 1515 (H03, Tue)
		Wang, Jun	384 (A03, Tue)	Wang, Yuchen	152 (A01, Wed), 153 (A01, Wed)
		Wang, Junhua	1751 (I04, Mon), 1997 (I07, Mon)	Wang, Yueqiang	988 (B08, Mon)
		Wang, Kai-Chin	2336 (L05, Wed)	Wang, YuHuang	717 (B03, Wed), 726 (B03, Wed)
		Wang, Kai-Xue	574 (A03, Thu)	Wang, Yujia	1579 (H04, Wed)
		Wang, Kaiying	1621 (I02, Wed), 1924 (I05, Thu)	Wang, Yuxuan	1560 (H04, Tue)
		Wang, Kangli	537 (A03, Wed)	Wang, Zhaoxuan	1720 (I04, Sun)
		Wang, Kangli	116 (A01, Mon)	Wang, Zhe	1825 (I05, Sun)
		Wang, Kangli	233 (A02, Wed), 390 (A03, Tue)	Wang, Zhenbin	1168 (D01, Wed)
				Wang, Zhi-Hao	2622 (Z02, Wed)

W

Wada, Masato	2450 (M01, Wed)
Wadsworth, Brian	972 (B08, Sun)
Wager, John	1186 (D02, Mon)
Wagner, Friedrich	1721 (I04, Sun)
Wagner, Nils	2588 (Z01, Tue)
Wahl, Jeremy	1368 (G01, Mon)
Wainright, Jesse	217 (A02, Wed), 240 (A02, Thu)
Wakabayashi, Hitoshi	837 (B06, Tue), 1411 (H01, Mon), 1422 (H01, Tue), 1440 (H01, Wed)
Wakamatsu, Hiroki	2085 (K03, Thu)
Walczak, Magdalena	1102 (C01, Wed)
Waldmann, Christopher	2041 (K01, Tue)
Waldvogel, Siegfried	2037 (K01, Mon), 2040 (K01, Tue)
Waldvogel, Siegfried	2038 (K01, Mon)
Waldvogel, Siegfried	2039 (K01, Mon)
Walker, Robert	1140 (C02, Wed)
Walker, Robert	1633 (I02, Thu)
Walker, Wesley	830 (B06, Mon)
Wall, Nathalie	2096 (L01, Mon)
Wallace, Andrea	1245 (E02, Tue)
Wallace, Gordon	834 (B06, Mon), 2235 (L02, Thu)
Wallace, Kenneth	2437 (M01, Wed)

Author Index

Author	Abs No.
Wang, Zhida	1656 (I03, Mon), 1657 (I03, Mon)
Wang, Zhiguo	2062 (K03, Wed)
Wang, Zhiming	1576 (H04, Wed)
Wang, Zhong Lin	1533 (H04, Mon)
Wang, Zhongyang	1786 (I04, Wed)
Wang, Zulin	1292 (F01, Tue)
Wangstrom, Abbey	618 (A04, Mon)
Warburton, Robert	358 (A03, Mon)
Warnecke, Alexander	250 (A03, Sun)
Warner, Jamie	856 (B06, Tue)
Warren, Roseanne	445 (A03, Wed)
Waston, Skylar	2054 (K03, Tue)
Watabe, Toshihisa	1470 (H02, Tue)
Watanabe, Ken	635 (B01, Sun)
Watanabe, Masahiro	2181 (L02, Tue)
Watanabe, Shuhei	1050 (C01, Mon)
Watkins, Tylan	279 (A03, Sun)
Watson, Venroy	1200 (E01, Tue)
Watts, Seth	192 (A02, Tue)
Wayne, Alysandria	685 (B02, Mon)
Weatherford, Todd	1406 (H01, Mon)
Weatherspoon, Mark	119 (A01, Tue), 127 (A01, Tue), 1200 (E01, Tue)
Weber, Adam	195 (A02, Tue), 1362 (F02, Thu), 1580 (I01, Wed), 1591 (I01, Wed), 1646 (I03, Mon), 1752 (I04, Tue), 1890 (I05, Wed)
Weber, André	132 (A01, Tue)
Webre, Whitney	910 (B07, Tue)
Webster, Richard	237 (A02, Thu), 1629 (I02, Thu)
Weckhuysen, Bert	2371 (L06, Mon)
Wee, Youngho	2246 (L03, Wed)
Wei, Guanghua	2183 (L02, Tue)
Wei, Pingchun	988 (B08, Mon)
Wei, Qi-Huo	1521 (H03, Wed)
Wei, Tao	787 (B05, Tue)
Wei, Vanessa	2542 (Z01, Tue)
Wei, Xiaoliang	207 (A02, Tue), 216 (A02, Wed), 230 (A02, Wed), 239 (A02, Thu), 241 (A02, Thu), 243 (A02, Thu)
Wei, Zi	1652 (I03, Mon)
Wei, Zidong	1653 (I03, Mon)
Weidner, John	1278 (F01, Mon), 1345 (F02, Wed)
Weisbrod, Kirk	1139 (C02, Wed)
Weisgraber, Todd	192 (A02, Tue)
Weisman, R. Bruce	730 (B03, Wed), 752 (B03, Thu), 753 (B03, Thu)
Weiss, Catherine	198 (A02, Tue)
Weiss, Paul	1516 (H03, Wed)
Weissmueller, Joerg	1984 (I06, Wed)
Weissmüller, Jörg	1983 (I06, Wed), 1989 (I06, Wed)
Weitzner, Stephen	1338 (F02, Tue)
Wejrzanowski, Tomasz	33 (A01, Mon)
Weker, Johanna	1042 (C01, Mon)
Welborn, Samuel	1951 (I06, Tue)
Weller, Jon	478 (A03, Wed)
Weltmann, Klaus-Dieter	1177 (D02, Mon)
Wen, Shifeng	1091 (C01, Wed)
Wen, Yanfen	408 (A03, Tue)
Wen, You-Hai	1107 (C02, Mon)
Wenseleers, Wim	699 (B03, Tue), 751 (B03, Thu)
Werth, Lauren	2528 (Z01, Tue)
Wessling, Matthias	1298 (F01, Tue)
West, Alan	1341 (F02, Wed)
West, Matt	629 (B01, Sun)
West, Robert	2 (A01, Sun)
West, Ryan	2451 (M01, Wed), 2606 (Z01, Tue)
Wetjen, Morten	2567 (Z01, Tue)
Whale, Alison	88 (A01, Mon)
Wheeler, Dean	363 (A03, Mon)
Wheeler, Dean	247 (A03, Sun), 268 (A03, Sun), 272 (A03, Sun), 1344 (F02, Wed)
Wheeler, Virginia	66 (A01, Mon), 1420 (H01, Tue)
Whelligan, Daniel	1748 (I04, Mon)
Whitacre, Jay	507 (A03, Wed), 508 (A03, Wed)

Author	Abs No.
White, Ralph	184 (A02, Tue)
White, Rembert	1278 (F01, Mon)
White, Robin	1962 (I06, Tue)
White, Scott	1956 (I06, Tue)
White, William	2284 (L04, Tue)
Whittaker-Brooks, Luisa	329 (A03, Mon)
Whittingham, M.	531 (A03, Wed)
Widanage, Widanalage	123 (A01, Tue), 517 (A03, Wed)
Wie, Dae Seung	1556 (H04, Tue)
Wiecha, Peter	1165 (D01, Wed)
Wiedner, Eric	2005 (I07, Mon)
Wiesendanger, Reto	1259 (E02, Wed)
Wiesner, Valerie	1128 (C02, Tue)
Wijten, Jochem	2371 (L06, Mon)
Wilbrecht, Linda	676 (B02, Mon)
Wildlock, Mats	1272 (F01, Mon)
Wiles, Luke	2013 (I07, Tue), 2015 (I07, Tue)
Wiley, Benjamin	1228 (E02, Mon), 1269 (F01, Mon)
Wilkins, Ginger-Marie	2602 (Z01, Tue), 2632 (Z02, Wed)
Wilkinson, David	1290 (F01, Tue), 1300 (F01, Tue), 1365 (F02, Thu), 1666 (I03, Tue), 1767 (I04, Tue), 1792 (I04, Wed), 1797 (I04, Wed), 2597 (Z01, Tue)
Wilkinson, Theron	2522 (Z01, Tue)
Will, Geoffrey	1115 (C02, Mon)
Willard, Adam	2294 (L04, Thu)
Willets, Katherine	2131 (L01, Tue)
Williams, Garth	316 (A03, Mon), 1077 (C01, Tue)
Williams, Jere	79 (A01, Mon), 90 (A01, Mon)
Williams, Quinton	512 (A03, Wed)
Williams, Rhodri	2250 (L03, Wed)
Williams, Ryan	674 (B02, Mon), 746 (B03, Thu)
Williamson, Grant	396 (A03, Tue)
Wills, Corinne	222 (A02, Wed)
Wilson, Benjamin	1041 (C01, Mon)
Wilson, Lon	690 (B02, Tue)
Wilson, Marshall	1384 (G01, Tue)
Winfield, Jonathan	2262 (L03, Mon)
Winfield, Jonathan	2264 (L03, Thu)
Winiwarter, Anna	2226 (L02, Thu)
Winkler, Krzysztof	822 (B05, Thu)
Winkler, Martin	2250 (L03, Wed)
Winter, Martin	257 (A03, Sun), 359 (A03, Mon)
Winterfeld, Kim A.	982 (B08, Mon)
Wiper, Paul	847 (B06, Tue)
Wippermann, Klaus	1049 (C01, Mon)
Wishart, James	2521 (Z01, Tue)
Witt, Jonathan	2148 (L01, Wed)
Wittman, Reed	58 (A01, Mon)
Wittmann, Wilhelm	246 (A03, Sun)
Wolak, Mattheaus	2389 (L06, Tue)
Wolfenstine, Jeff	290 (A03, Mon), 483 (A03, Wed)
Wolfenstine, Jeffrey	482 (A03, Wed)
Wolfschmidt, Holger	222 (A02, Wed)
Wöll, Christof	934 (B07, Wed)
Wollmershauser, James	66 (A01, Mon)
Wolverton, Chris	442 (A03, Wed)
Won, Da Hye	1827 (I05, Sun)
Wong, Andrew	21 (A01, Sun)
Wong, Andrew	1615 (I02, Wed)
Wong, Ka Hung	1992 (I06, Wed)
Wong, Min Hao	891 (B06, Thu), 2415 (M01, Tue)
Woo, Sang-Kuk	2651 (Z03, Wed)
Woo, Seong Ihl	1827 (I05, Sun)
Woo, Sung Pil	2253 (L03, Wed), 2430 (M01, Wed), 2458 (M01, Tue)
Wood, Brandon	622 (B01, Sun), 1284 (F01, Tue), 1330 (F02, Tue), 1898 (I05, Thu)
Wood, David	253 (A03, Sun), 288 (A03, Mon)
Wood, Marissa	253 (A03, Sun)
Wood, Sean	596 (A03, Thu), 604 (A03, Thu)

Author	Abs No.
Workentin, Mark	2022 (K01, Mon)
Worsley, Marcus	192 (A02, Tue), 2366 (L06, Mon)
Wortman-Otto, Katherine	2569 (Z01, Tue)
Wouters, Yves	1118 (C02, Tue)
Wright, Ruishu	2422 (M01, Tue)
Wrubel, Jacob	1756 (I04, Tue)
Wu, Bingbin	395 (A03, Tue), 1195 (E01, Tue)
Wu, Chang-En	423 (A03, Tue)
Wu, Cheng Han	846 (B06, Tue)
Wu, Chih-I	1489 (H03, Mon)
Wu, Cuo	1576 (H04, Wed)
Wu, De-Yin	1613 (I02, Wed)
Wu, Dehui	1122 (C02, Tue)
Wu, Ding Chou	609 (A04, Mon), 1576 (H04, Wed)
Wu, Dongjun	1226 (E02, Mon), 2571 (Z01, Tue)
Wu, Gang	74 (A01, Mon), 1695 (I03, Wed), 1722 (I04, Sun), 2004 (I07, Mon), 2011 (I07, Tue), 2191 (L02, Tue), 2342 (L05, Wed)
Wu, Guan-Wei	1472 (H02, Tue)
Wu, Guangming	2612 (Z01, Tue)
Wu, Haoran	736 (B03, Thu), 2390 (L06, Tue)
WU, Hsiwen	305 (A03, Mon)
Wu, Huali	1124 (C02, Tue)
Wu, Jason	1405 (H01, Mon)
Wu, Jih-Jen	1828 (I05, Sun)
Wu, Jiming	507 (A03, Wed), 508 (A03, Wed)
Wu, Jinpeng	206 (A02, Tue)
Wu, Jyh-Ming	860 (B06, Tue)
Wu, Kuang Jen	703 (B03, Tue)
Wu, Maochun	187 (A02, Tue)
Wu, Min-Ci	1312 (F01, Tue)
Wu, Nae-Lih	12 (A01, Sun), 423 (A03, Tue)
Wu, Nianqiang	1859 (I05, Tue), 2498 (M02, Tue)
Wu, Qixing	191 (A02, Tue)
Wu, S.	546 (A03, Wed)
Wu, Shang-Jung	680 (B02, Mon)
Wu, Shu-Chi	609 (A04, Mon), 1571 (H04, Wed), 1576 (H04, Wed)
Wu, Simson	1708 (I03, Thu)
Wu, Tai Sing	1708 (I03, Thu)
Wu, Tianpin	258 (A03, Sun)
Wu, Tom	1528 (H03, Wed)
Wu, Wei	1496 (H03, Tue), 1596 (I02, Wed)
Wu, Wei	507 (A03, Wed), 508 (A03, Wed)
Wu, Wen-Wei	1312 (F01, Wed), 1314 (F01, Wed), 2326 (L05, Tue), 2362 (L05, Thu)
Wu, Wen-Wei	1433 (H01, Tue), 1448 (H01, Wed), 2459 (M01, Wed)
Wu, Wenzhuo	1510 (H03, Tue)
Wu, Xianyong	193 (A02, Tue), 509 (A03, Wed), 519 (A03, Wed)
Wu, Xiaohan	896 (B06, Thu), 1029 (B09, Sun)
Wu, Xiaojian	717 (B03, Wed)
Wu, Xiaojian (James)	726 (B03, Wed)
Wu, Xiaojun	16 (A01, Sun)
Wu, Xinyan	1984 (I06, Wed)
Wu, Yiren	1239 (E02, Tue)
Wu, Yueshen	1825 (I05, Sun)
Wu, Yuting	2434 (M01, Wed)
Wu, Zenan	1331 (F02, Tue)
Wu, Zhaohui	314 (A03, Mon), 367 (A03, Mon)
Wu, Zhenghui	1538 (H04, Mon)
Wurz, Peter	1259 (E02, Wed)
Wutthiprom, Juthaporn	1650 (I03, Mon)
Wyk, Andrea	963 (B08, Sun)
Wynn, Thomas	594 (A03, Thu)
Wyssocka-Zolopa, Monika	822 (B05, Thu)

X

Xi, Fanxing	1854 (I05, Mon)
Xi, Jianguo	2445 (M01, Wed), 2446 (M01, Wed)
Xia, Dongsheng	2349 (L05, Wed)
Xia, Xiaoxing	325 (A03, Mon)
Xia, Yong-Yao	493 (A03, Wed), 597 (A03, Thu)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Xia, Younan	1227 (E02, Mon)	Xu, Xinzhao	742 (B03, Thu)	Yang, Fuhua	2590 (Z01, Tue)
Xiang, Chengxiang	1606 (I02, Wed), 1648 (I03, Mon), 1864 (I05, Tue), 1890 (I05, Wed), 1906 (I05, Thu)	Xu, Xuejun	1174 (D01, Wed)	Yang, Gang	64 (A01, Mon)
Xiang, Jingwei	492 (A03, Wed)	Xu, Ye	2322 (L05, Tue)	Yang, Guang	49 (A01, Mon), 2629 (Z02, Wed)
Xiang, Rong	702 (B03, Tue)	Xu, Yin	1916 (I05, Thu)	Yang, Gwangseok	1423 (H01, Tue)
Xiang, Rui	1652 (I03, Mon)	Xu, Zijie	1511 (H03, Tue)	Yang, Heng	325 (A03, Mon)
Xiao, Biwei	453 (A03, Wed)	Xue, Can	1920 (I05, Thu)	Yang, Hong	1641 (I03, Mon)
Xiao, Fei	1781 (I04, Wed)	Xue, Mingzhe	2518 (Z01, Tue)	Yang, Hongliu	1254 (E02, Wed)
Xiao, Jie	395 (A03, Tue), 1195 (E01, Tue)			Yang, Ji-Hee	1570 (H04, Wed)
Xiao, Jie	315 (A03, Mon)	Y		Yang, Jiancheng	1419 (H01, Tue), 1421 (H01, Tue), 1423 (H01, Tue)
Xiao, Jun	820 (B05, Thu)	Yabutsuka, Takeshi	514 (A03, Wed), 2640 (Z03, Wed)	Yang, Jih-Sheng	1828 (I05, Sun)
Xiao, Liusheng	1968 (I06, Tue)	Yabuuchi, Naoaki	379 (A03, Tue)	Yang, Jihui	296 (A03, Mon), 1195 (E01, Tue), 1694 (I03, Wed)
Xiao, Xianghui	352 (A03, Mon), 439 (A03, Tue)	Yadav, Gautam	53 (A01, Mon), 115 (A01, Mon), 140 (A01, Tue), 2572 (Z01, Tue)	Yang, Jihui	56 (A01, Mon), 206 (A02, Tue), 499 (A03, Wed), 513 (A03, Wed), 661 (B01, Tue), 1579 (H04, Wed)
Xiao, Xingcheng	267 (A03, Sun), 456 (A03, Wed), 465 (A03, Wed), 499 (A03, Wed), 1953 (I06, Tue)	Yadav, Kavita	1377 (G01, Mon)	Yang, Jiong	206 (A02, Tue)
Xie, Jian	425 (A03, Tue)	Yadav, Rohit Asok	1427 (H01, Tue)	Yang, Juan	670 (B02, Mon)
Xie, Lin	1931 (I06, Mon)	Yaghoobnejad, Hooman	1951 (I06, Tue)	Yang, Juan	704 (B03, Tue)
Xie, Shuyao	1511 (H03, Tue)	Yaghoubi, Houman	1890 (I05, Wed)	Yang, Jun	638 (B01, Sun)
Xie, Su-Yuan	810 (B05, Wed), 820 (B05, Thu)	Yagi, Ichizo	944 (B07, Thu)	Yang, Li-Heng	2327 (L05, Tue)
Xie, Yannan	1500 (H03, Tue)	Yahiro, Hidenori	1201 (E01, Tue)	Yang, Lijun	2170 (L02, Mon)
Xie, Yingying	81 (A01, Mon)	Yakaboyle, Gunes	158 (A01, Wed), 2419 (M01, Tue), 2453 (M01, Wed)	Yang, Min	1709 (I03, Thu)
Xie, Yongshu	988 (B08, Mon)	Yakiyama, Yumi	941 (B07, Wed)	Yang, O-Bong	2097 (L01, Mon)
Xie, Yuanyuan	175 (A01, Thu)	Yamada, Haruhiko	1581 (I01, Wed)	Yang, Ping	229 (A02, Wed)
Xie, Yun	1104 (C02, Mon)	Yamada, Yasuyuki	1004 (B08, Tue)	Yang, Rusen	1493 (H03, Mon)
Xifré-Pérez, Elisabet	1523 (H03, Wed), 2397 (L06, Tue), 2499 (M02, Tue)	Yamaguchi, Takeo	1775 (I04, Wed)	Yang, Shangfeng	808 (B05, Wed)
Xin, Huolin	323 (A03, Mon)	Yamaguchi, Yusuke	2049 (K01, Tue)	Yang, Shihe	2232 (L02, Thu)
Xin, Le	1736 (I04, Sun), 2009 (I07, Tue)	Yamaguchi, Yusuke	2062 (K03, Wed)	Yang, Tao	2320 (L05, Tue), 2361 (L05, Thu), 2363 (L05, Thu)
Xin, Wen-Li	2435 (M01, Wed)	Yamamoto, Kentaro	1810 (I04, Wed), 2515 (Z01, Tue)	Yang, Tzu-Chin	1129 (C02, Tue), 1130 (C02, Tue)
Xin, Zhiyuan	1122 (C02, Tue)	Yamamoto, Kentaro	1809 (I04, Wed), 2585 (Z01, Tue)	Yang, Tzu-Sen	1972 (I06, Tue)
Xing, Weibing	31 (A01, Mon), 124 (A01, Tue)	Yamamoto, Kimihisa	929 (B07, Wed)	Yang, Wanli	206 (A02, Tue)
Xing, Xing	1236 (E02, Tue)	Yamamoto, Shun	702 (B03, Tue)	Yang, Wei	789 (B05, Tue)
Xing, Yangchuan	2193 (L02, Tue)	Yamamoto, Taiki	1411 (H01, Mon)	Yang, Wei	879 (B06, Wed)
Xiong, Bo	2467 (M01, Thu)	Yamamoto, Yuta	912 (B07, Tue)	Yang, Weifeng	1718 (I04, Sun)
Xiong, Cheng	276 (A03, Sun), 285 (A03, Sun)	Yamane, Daisuke	1204 (E01, Tue)	Yang, Xiao-Dong	2312 (L05, Tue)
Xiong, Claire	81 (A01, Mon), 471 (A03, Wed)	Yamashita, Ken-ichi	971 (B08, Sun)	Yang, Xiao-Qing	312 (A03, Mon), 314 (A03, Mon), 323 (A03, Mon)
Xiong, Dejun	454 (A03, Wed)	Yamashita, Tenko	1370 (G01, Mon), 1371 (G01, Mon)	Yang, Xiaolin	269 (A03, Sun)
Xiong, Ganglin	1563 (H04, Wed)	Yamate, Shigeki	435 (A03, Tue)	Yang, Xuan	2006 (I07, Mon)
Xiong, Ming	1197 (E01, Tue)	Yamauchi, Akira	1257 (E02, Wed)	Yang, Yang	110 (A01, Mon), 1196 (E01, Tue), 1522 (H03, Wed), 1873 (I05, Tue)
Xiong, Qi	1055 (C01, Mon), 1062 (C01, Tue), 1070 (C01, Tue)	Yamazaki, Yoshito	971 (B08, Sun)	Yang, Yin	372 (A03, Tue)
Xiong, Yaoyao	985 (B08, Mon)	Yan, Changfeng	1656 (I03, Mon), 1657 (I03, Mon)	Yang, Yiqun	77 (A01, Mon), 90 (A01, Mon), 99 (A01, Mon)
Xiong, Yujie	1833 (I05, Sun)	Yan, Litao	1667 (I03, Tue), 1902 (I05, Thu)	Yang, Yong	374 (A03, Tue)
Xu, Bingjun	1751 (I04, Mon), 2006 (I07, Mon)	Yan, Litao	2329 (L05, Tue)	Yang, Yoona	697 (B03, Tue), 733 (B03, Wed)
Xu, Cheng	233 (A02, Wed)	Yan, Mengyu	56 (A01, Mon), 296 (A03, Mon), 1694 (I03, Wed)	Yang, Zheng	239 (A02, Thu)
Xu, Cheyan	2014 (I07, Tue)	Yan, Mingquan	2134 (L01, Wed)	Yang, Zhenzhen	350 (A03, Mon)
Xu, Hangxun	1914 (I05, Thu)	Yan, Pengfei	50 (A01, Mon)	Yano, Hiroshi	2210 (L02, Wed), 2305 (L05, Mon)
Xu, Hui	1594 (I02, Wed), 1645 (I03, Mon), 1667 (I03, Tue), 1693 (I03, Wed), 1695 (I03, Wed), 1991 (I06, Wed), 2011 (I07, Tue)	Yan, Qizhang	1236 (E02, Tue)	Yao, Da-Lin	1193 (D02, Mon)
Xu, Jiagang	456 (A03, Wed)	Yan, Yan	145 (A01, Wed)	Yao, Shanshan	400 (A03, Tue)
Xu, Jiagang	1953 (I06, Tue)	Yan, Yaping	759 (B04, Mon)	Yao, Shanshan	413 (A03, Tue)
Xu, Jianbo	186 (A02, Tue), 187 (A02, Tue), 276 (A03, Sun), 285 (A03, Sun)	Yan, Yushan	1747 (I04, Mon), 1751 (I04, Mon), 1997 (I07, Mon), 2006 (I07, Mon), 2011 (I07, Tue), 2178 (L02, Tue)	Yao, Siyu	2231 (L02, Thu)
Xu, Jie	2472 (M01, Thu)	Yan, Zhiwei	159 (A01, Wed)	Yao, Takeshi	514 (A03, Wed), 2640 (Z03, Wed)
Xu, Jing	1134 (C02, Tue)	Yanagisawa, Masahiro	1241 (E02, Tue)	Yao, Xueli	1974 (I06, Tue)
Xu, John	1720 (I04, Sun)	Yanagishita, Takashi	948 (B07, Thu)	Yao, Yan	171 (A01, Thu), 346 (A03, Mon)
Xu, Junyuan	1713 (I03, Thu)	Yanai, Minoru	1913 (I05, Thu)	Yao, Yao	2001 (I07, Mon)
Xu, Kang	387 (A03, Tue), 418 (A03, Tue), 426 (A03, Tue), 548 (A03, Wed), 572 (A03, Thu), 1199 (E01, Tue)	Yang, Bin	1301 (F01, Tue)	Yao, Yuxiang	617 (A04, Mon)
Xu, Ke	885 (B06, Wed)	Yang, Bo	242 (A02, Thu)	Yarar Kaplan, Begüm	2300 (L05, Mon), 2350 (L05, Wed)
Xu, Lianbin	2380 (L06, Mon)	Yang, Byung Chan	862 (B06, Tue), 1807 (I04, Wed)	Yarbro, Stephen	859 (B06, Tue)
Xu, Luzhu	830 (B06, Mon)	Yang, Cary	898 (B06, Thu), 2510 (M02, Tue)	Yasri, Nael	1287 (F01, Tue), 2213 (L02, Wed), 2391 (L06, Tue)
Xu, Nengneng	1636 (I02, Thu)	Yang, Cheng	2080 (K03, Mon)	Yasuda, Kouji	1313 (F01, Wed)
Xu, Sheng	1550 (H04, Tue)	Yang, Chia Ming	1472 (H02, Tue)	Yasuzawa, Mikito	2475 (M02, Mon)
Xu, Shuai	2092 (K03, Thu)	Yang, Chongyin	418 (A03, Tue)	Yaswant, Vaddi	1565 (H04, Wed)
Xu, Weichuan	2329 (L05, Tue)	Yang, Chuanbo	126 (A01, Tue), 356 (A03, Mon), 1327 (F02, Tue)	Yates, Matthew	2244 (L03, Wed)
Xu, Wu	42 (A01, Mon), 394 (A03, Tue), 548 (A03, Wed), 587 (A03, Thu), 1234 (E02, Tue)	Yang, Daijun	1811 (I04, Wed)	Yatzor, Brett	1183 (D02, Mon)
Xu, Wutao	1616 (I02, Wed), 1617 (I02, Wed)	Yang, Dali	2332 (L05, Wed)	Yazdani, Aliakbar	107 (A01, Mon)
		Yang, Fan	425 (A03, Tue)	Ye, Jianchao	2366 (L06, Mon)
		Yang, Feichen	1269 (F01, Mon)	Ye, Peide	1418 (H01, Tue)
		Yang, Feng	704 (B03, Tue)	Ye, Siyu	2170 (L02, Mon)
				Ye, Zongbiao	917 (B07, Tue)
				Yeboah, Yaw	1200 (E01, Tue)

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Yeboah, Yaw	1276 (F01, Mon)	Young, R.	2476 (M02, Mon)	Zavadil, Kevin	262 (A03, Sun), 263 (A03, Sun), 279 (A03, Sun)
Yeh, Jien-Wei	1571 (H04, Wed)	Young, Sheng - Joue	1163 (D01, Tue)	Zawodzinski, Thomas	1628 (I02, Thu), 1760 (I04, Tue), 2293 (L04, Tue)
Yeh, Nai-Hua	2023 (K01, Mon)	Youngblood, Jeffrey	474 (A03, Wed)	Zawodzinski, Thomas	58 (A01, Mon), 198 (A02, Tue), 1755 (I04, Tue), 1777 (I04, Wed), 2257 (L03, Thu), 2631 (Z02, Wed)
Yeh, Ping-Hung	2137 (L01, Wed), 2459 (M01, Wed), 2468 (M01, Thu)	Yu, Byoung-soo	1562 (H04, Tue)	Zazpe, Raul	2401 (L06, Tue)
Yeh, Tsung-Kuang	1047 (C01, Mon)	Yu, Byoungyong	428 (A03, Tue)	Zelenay, Piotr	1687 (I03, Wed), 1717 (I04, Sun), 2185 (L02, Tue), 2313 (L05, Tue), 2319 (L05, Tue)
Yellappa, Shivaraj	910 (B07, Tue)	Yu, Choongho	64 (A01, Mon), 149 (A01, Wed)	Zeng, Lin	187 (A02, Tue), 276 (A03, Tue)
Yen, Chao Chun	1081 (C01, Tue)	Yu, Chun	1104 (C02, Mon)	Zeng, Lin	285 (A03, Sun)
Yen, Lin-Chen	1472 (H02, Tue)	Yu, Dian	1211 (E01, Wed), 1445 (H01, Wed)	Zeng, Lin	186 (A02, Tue)
Yen, Shiow	1081 (C01, Tue), 1 249 (E02, Tue), 1813 (I04, Wed)	Yu, Eileen	1626 (I02, Thu), 2247 (L03, Wed)	Zeng, Zipeng	339 (A03, Sun)
Yen, Wen-Chun	836 (B06, Mon)	Yu, Haoran	1643 (I03, Mon), 1728 (I04, Sun), 2323 (L05, Tue), 2355 (L05, Thu)	Zenkert, Dan	1986 (I06, Wed)
Yeo, Jae-Seong	204 (A02, Tue), 205 (A02, Tue)	Yu, Hyein	111 (A01, Mon)	Zenyuk, Iryna	1768 (I04, Tue), 2376 (L06, Mon)
Yeon, JeongSeok	538 (A03, Wed)	Yu, Kang	425 (A03, Tue)	Zerihun, Nega	1352 (F02, Wed)
Yepez, Elizabeth	2166 (L02, Mon)	Yu, Ki Jun	1569 (H04, Wed)	Zevgolis, Alysia	1330 (F02, Tue)
Yewale, Ashish	2265 (L03, Thu)	Yu, Lei	156 (A01, Wed)	Zhai, Yichen	1538 (H04, Mon)
Yi, Eongyu	443 (A03, Wed), 2595 (Z01, Tue)	Yu, Lu	42 (A01, Mon), 394 (A03, Tue), 587 (A03, Thu)	Zhai, Yunfeng	1588 (I01, Wed)
Yi, Ran	831 (B06, Mon)	Yu, Seonghoon	2603 (Z01, Tue)	Zhan, Xiaowen	2648 (Z03, Wed)
Yildiz, Bilge	1944 (I06, Mon)	Yu, Seunggho	479 (A03, Wed), 486 (A03, Wed)	Zhan, Yunfeng	640 (B01, Sun)
Yilmán, Dilara	2392 (L06, Tue)	Yu, Taeyeon	565 (A03, Wed)	Zhang, Anni	1890 (I05, Wed)
Yim, Chae-Ho	476 (A03, Wed)	Yu, Weilai	2123 (L01, Tue), 2135 (L01, Wed)	Zhang, Baohua	2055 (K03, Tue)
Yim, Sung-Dae	1746 (I04, Mon), 1991 (I06, Wed), 2169 (L02, Mon)	Yu, Xiaoyun	306 (A03, Mon), 1900 (I05, Thu)	Zhang, Boyuan	660 (B01, Tue)
Yin, Liang	314 (A03, Mon), 377 (A03, Tue)	Yu, Yang	1936 (I06, Mon)	Zhang, Chen	152 (A01, Wed), 153 (A01, Wed), 159 (A01, Wed)
Yin, Xi	2319 (L05, Tue)	Yu, Yang	442 (A03, Wed)	Zhang, Chengxu	1707 (I03, Thu), 2232 (L02, Thu)
Yin, Xi	2313 (L05, Tue)	Yu, Yixuan	1211 (E01, Wed), 1445 (H01, Wed)	Zhang, Chenyang	2134 (L01, Wed)
Yliniemi, Kirsi	1041 (C01, Mon), 1292 (F01, Tue)	Yuan, Ke-Fang	1193 (D02, Mon)	Zhang, Cunman	1811 (I04, Wed), 2518 (Z01, Tue)
Yoyo, Leonardo	1480 (H02, Tue)	Yuan, Lixia	492 (A03, Wed)	Zhang, Dongping	1192 (D02, Mon)
Yokoyama, Kouji	1809 (I04, Wed), 1810 (I04, Wed)	Yuan, Mengying	437 (A03, Tue)	Zhang, Fan	618 (A04, Mon)
Yokoyama, Shun	2517 (Z01, Tue)	Yuan, Tao	1397 (G01, Tue)	Zhang, Fayin	1511 (H03, Tue)
Yong, Xingyue	1093 (C01, Wed)	Yuan, Weijian	1790 (I04, Wed)	Zhang, Guang-Yao	2435 (M01, Wed)
Yoo, Donghyeon	1502 (H03, Tue), 1504 (H03, Tue)	Yuan, Xin	1091 (C01, Wed)	Zhang, Guangsheng	364 (A03, Mon)
Yoo, Eun-Ji	204 (A02, Tue), 205 (A02, Tue)	Yuan, Xin	1089 (C01, Wed)	Zhang, Hailiang	1521 (H03, Wed)
Yoo, Il-han	903 (B07, Tue)	Yuan, Yifei	258 (A03, Sun)	Zhang, Haiyang	1192 (D02, Mon), 1193 (D02, Mon), 1393 (G01, Tue)
Yoo, Jae Young	2568 (Z01, Tue)	Yudi, Yudi	266 (A03, Sun)	Zhang, Hanguang	1722 (I04, Sun)
Yoo, Ji Mun	2352 (L05, Wed)	Yue, Yuan	431 (A03, Tue)	Zhang, Hanyu	853 (B06, Tue)
Yoo, Kicheon	758 (B04, Mon), 784 (B04, Tue)	Yue, Zhufeng	1091 (C01, Wed)	Zhang, Heng	1968 (I06, Tue)
Yoo, Seung Eul	1977 (I06, Tue)	Yuede, Nicole	2261 (L03, Thu), 2529 (Z01, Tue)	Zhang, Huan	683 (B02, Mon)
Yoo, Seung-Eul	541 (A03, Wed)	Yufit, Vladimir	219 (A02, Wed)	Zhang, Huilong	1563 (H04, Wed)
Yoo, Sung Jong	1812 (I04, Wed)	Yukawa, Mayumi	914 (B07, Tue)	Zhang, Jason	307 (A03, Mon), 448 (A03, Wed)
Yoo, Young Ran	1072 (C01, Tue)	Yuki, Yabuta	2585 (Z01, Tue)	Zhang, Ji-Guang	42 (A01, Mon)
Yoon, Gabin	1682 (I03, Tue)	Yum, Seung Jib	1761 (I04, Tue)	Zhang, Ji-Guang	26 (A01, Mon), 354 (A03, Mon), 374 (A03, Tue), 394 (A03, Tue), 548 (A03, Wed), 587 (A03, Thu), 1234 (E02, Tue)
Yoon, Insun	1949 (I06, Tue)	Yumak, Tugrul	158 (A01, Wed)	Zhang, Jian-Jun	94 (A01, Mon), 530 (A03, Wed)
Yoon, Jaesik	2253 (L03, Wed), 2430 (M01, Wed), 2458 (M01, Wed)	Yun, Bin-Na	542 (A03, Wed)	Zhang, Jianbo	2304 (L05, Mon)
Yoon, Jaesik	2457 (M01, Wed)	Yun, Da-Jeong	1570 (H04, Wed)	Zhang, Jianqiang	1104 (C02, Mon)
Yoon, Mi Young	503 (A03, Wed)	Yun, Jong-II	1282 (F01, Mon)	Zhang, Jin	1838 (I05, Sun)
Yoon, Moon-su	295 (A03, Mon)	Yun, Jun Seong	2577 (Z01, Tue)	Zhang, Jingjing	230 (A02, Wed), 461 (A03, Wed)
Yoon, Myung-Han	1570 (H04, Wed)	Yun, Junyeong	82 (A01, Mon)	Zhang, JiuJun	1616 (I02, Wed), 1617 (I02, Wed)
Yoon, Seongwon	2603 (Z01, Tue)	Yun, Sol	538 (A03, Wed)	Zhang, Junliang	2183 (L02, Tue)
Yoon, Sukbum	1437 (H01, Tue)	Yun, Wenbing	269 (A03, Sun), 2338 (L05, Wed)	Zhang, Junying	1921 (I05, Thu)
Yoon, Sung Pil	1812 (I04, Wed)	Yushin, Gleb	61 (A01, Mon)	Zhang, Kun	1062 (C01, Tue)
Yoon, Sung-Min	1450 (H01, Wed), 1570 (H04, Wed)	Zabara, Mohammed	1355 (F02, Wed)	Zhang, Lei	1684 (I03, Wed)
Yoon, Woo Young	536 (A03, Wed)	Zabielaite, Ausrine	1787 (I04, Wed)	Zhang, Lei	1335 (F02, Tue)
Yoon, Young Soo	2253 (L03, Wed), 2430 (M01, Wed), 2457 (M01, Wed), 2458 (M01, Wed)	Zaccaria, R.	654 (B01, Tue)	Zhang, Li	382 (A03, Tue)
Yoon, Young-Gi	1800 (I04, Wed)	Zacharias, Margit	1158 (D01, Tue)	Zhang, Li	961 (B08, Sun), 970 (B08, Sun)
Yoshida, Jun-ichi	2071 (K03, Wed)	Zagal, Jose	2187 (L02, Tue)	Zhang, Linghong	48 (A01, Mon), 350 (A03, Mon), 460 (A03, Wed)
Yoshida, Kazunari	2450 (M01, Wed)	Zahab, Ahmed	750 (B03, Thu)	Zhang, Lu	230 (A02, Wed), 278 (A03, Sun), 461 (A03, Wed), 472 (A03, Wed)
Yoshii, Kazuki	380 (A03, Tue)	Zahiri, Beniamin	2136 (L01, Wed)	Zhang, Lulu	1701 (I03, Wed)
Yoshii, Kazuki	227 (A02, Wed)	Zahiri, Beniamin	2140 (L01, Wed)	Zhang, Mei-Lin	820 (B05, Thu)
Yoshimura, Masamichi	1664 (I03, Tue)	Zaibaq, Nicholas	690 (B02, Tue)	Zhang, Mingchao	619 (B01, Sun)
You, Dae Jong	763 (B04, Mon)	Zain, Muhammed	951 (B07, Thu)	Zhang, Minghao	289 (A03, Mon)
You, Hoydoon	1230 (E02, Mon), 287 (L04, Tue)	Zahir, Troy	1384 (G01, Tue)	Zhang, Mingxuan	368 (A03, Mon)
You, In-Kyu	625 (B01, Sun), 657 (B01, Tue)	Zak, Jerzy	2302 (L05, Mon), 2341 (L05, Wed)	Zhang, Nannan	1548 (H04, Tue)
You, Seung-Jae	553 (A03, Wed)	Zakrzewska, Barbara	2341 (L05, Wed)	Zhang, Pei-xin	2356 (L05, Thu)
Youn, Chulmin	102 (A01, Mon)	Zan, Lingxing	2331 (L05, Wed)	Zhang, Qi	1616 (I02, Wed), 1617 (I02, Wed)
Young, Benjamin	555 (A03, Wed)	Zander, Zach	1872 (I05, Tue)		
Young, Courtney	2153 (L01, Wed)	Zangari, Giovanni	1611 (I02, Wed), 1916 (I05, Thu), 2102 (L01, Mon)		
Young, David	1065 (C01, Tue)	Zango, German	798 (B05, Wed)		
Young, David	1104 (C02, Mon)	Zankowski, Stanislaw	1210 (E01, Wed)		
Young, James	1883 (I05, Wed)		1213 (E01, Wed)		
Young, James	1901 (I05, Thu)	Zanzola, Elena	179 (A02, Tue)		
		Zapata Dominguez, Diana	248 (A03, Sun)		
		Zatsikha, Yuriy	990 (B08, Mon)		
		Zaumseil, Jana	744 (B03, Thu)		

Z

Author Index

Author	Abs No.	Author	Abs No.	Author	Abs No.
Zhang, Qi	1620 (I02, Wed)	Zhao, Jing	1870 (I05, Tue)	Zhou, Xiangyang	152 (A01, Wed),
Zhang, Qiang	1452 (H01, Wed)	Zhao, Jing	928 (B07, Wed)	153 (A01, Wed), 159 (A01, Wed)	
Zhang, Qianyan	810 (B05, Wed)	Zhao, Kai	2647 (Z03, Wed)	Zhou, Xiao-Dong	1741 (I04, Mon)
Zhang, Qichun	924 (B07, Wed)	Zhao, Kejie	1947 (I06, Tue), 1950 (I06, Tue)	Zhou, Xiao-Dong	1636 (I02, Thu)
Zhang, Qinglin	456 (A03, Wed), 1953 (I06, Tue)	Zhao, Ran	88 (A01, Mon)	Zhou, Xuelong	191 (A02, Tue)
Zhang, Shawn	1816 (I04, Thu)	Zhao, Rong	2100 (L01, Mon)	Zhou, Xuemei	1918 (I05, Thu), 2398 (L06, Tue)
Zhang, Shengjiao	897 (B06, Thu)	Zhao, Ruirui	518 (A03, Wed)	Zhou, Xuemei	1709 (I03, Thu), 1899 (I05, Thu)
Zhang, Shumao	1166 (D01, Wed)	Zhao, Shasha	794 (B05, Wed)	Zhou, Yan	2474 (M02, Mon)
Zhang, Shuyuan	2590 (Z01, Tue)	Zhao, Shuai	1645 (I03, Mon), 1667 (I03, Tue), 1695 (I03, Wed), 2011 (I07, Tue)	Zhou, Yue	1618 (I02, Wed), 1620 (I02, Wed)
Zhang, Suoming	1543 (H04, Mon)	Zhao, Tianshou	186 (A02, Tue), 187 (A02, Tue), 276 (A03, Sun), 285 (A03, Sun)	Zhou, Zhi-You	2312 (L05, Tue)
Zhang, Tao	1967 (I06, Tue)	Zhao, Wengao	307 (A03, Mon), 374 (A03, Tue), 448 (A03, Wed)	Zhu, Cheng	2366 (L06, Mon)
Zhang, Tengfei	1718 (I04, Sun)	Zhao, Xiuyun	476 (A03, Wed)	Zhu, Chengzhou	2367 (L06, Mon), 2549 (Z01, Tue)
Zhang, Tianran	1686 (I03, Wed)	Zhao, Yicheng	1966 (I06, Tue), 1974 (I06, Tue), 1975 (I06, Tue), 1976 (I06, Tue)	Zhu, Chengzhou	1683 (I03, Wed)
Zhang, Wenqing	206 (A02, Tue)	Zhao, Yicong	1575 (H04, Wed)	Zhu, Hanyu	874 (B06, Wed)
Zhang, Xia-Guang	1613 (I02, Wed)	Zhao, Yong	2235 (L02, Thu)	Zhu, Jiahua	1508 (H03, Tue)
Zhang, Xiahui	301 (A03, Mon), 420 (A03, Tue), 588 (A03, Thu), 2584 (Z01, Tue), 2594 (Z01, Tue), 2596 (Z01, Tue)	Zhao, Yun	1751 (I04, Mon), 1997 (I07, Mon)	Zhu, Jiabin	1931 (I06, Mon)
Zhang, Xiang	874 (B06, Wed)	Zhao, Yun	1751 (I04, Mon), 1997 (I07, Mon)	Zhu, Jun-Jie	2492 (M02, Tue)
Zhang, Xiaotian	845 (B06, Tue)	Zharov, Ilya	2372 (L06, Mon)	Zhu, Lei	278 (A03, Sun)
Zhang, Xiaoxuan	1954 (I06, Tue)	Zheludkevich, Mikhail	1206 (E01, Wed)	Zhu, Meng	1463 (H02, Mon)
Zhang, Xingxing	2544 (Z01, Tue)	Zheng, Hao	480 (A03, Wed)	Zhu, Ruidie	603 (A03, Thu)
Zhang, Xingxing	788 (B05, Tue), 792 (B05, Wed)	Zheng, Jianming	307 (A03, Mon), 374 (A03, Tue), 394 (A03, Tue), 448 (A03, Wed)	Zhu, Shangqian	2001 (I07, Mon), 2200 (L02, Wed)
Zhang, Xu	1299 (F01, Tue)	Zheng, Jim	1200 (E01, Tue)	Zhu, Wenchang	361 (A03, Mon)
Zhang, Xuelin	1726 (I04, Sun), 1790 (I04, Wed)	Zheng, Jim	280 (A03, Sun)	Zhu, Ye	571 (A03, Thu)
Zhang, Xueqiang	1898 (I05, Thu)	Zheng, Jiwei	1718 (I04, Sun)	Zhu, Yimei	2198 (L02, Wed)
Zhang, Yangjun	244 (A03, Sun)	Zheng, Ming	670 (B02, Mon), 696 (B03, Tue), 697 (B03, Tue), 712 (B03, Tue), 719 (B03, Wed), 733 (B03, Wed)	Zhu, Yu	46 (A01, Mon)
Zhang, Yaohui	1234 (E02, Tue)	Zheng, Nan	2082 (K03, Thu)	Zhu, Yuexing	2630 (Z02, Wed)
Zhang, Yibin	1463 (H02, Mon)	Zheng, Shushu	828 (B05, Thu)	Zhu, Ziyi	447 (A03, Wed)
Zhang, Yibin	1177 (D02, Mon)	Zheng, Tian	834 (B06, Mon)	Zhuang, Jiaxin	789 (B05, Tue)
Zhang, Yiheng	1543 (H04, Mon)	Zheng, Tianyue	349 (A03, Mon)	Ziegelbauer, Joseph	1796 (I04, Wed)
Zhang, Ying	1134 (C02, Tue)	Zheng, Weiho	1361 (F02, Thu)	Ziegler, Kirk	732 (B03, Wed)
Zhang, Ying	495 (A03, Wed)	Zheng, Xiaolin	1602 (I02, Wed)	Zilberman, Ilya	34 (A01, Mon)
Zhang, Yingjie	447 (A03, Wed), 1707 (I03, Thu)	Zheng, Xiaoyu	827 (B05, Thu)	Zille, Andrea	1176 (D02, Mon)
Zhang, Yingying	619 (B01, Sun)	Zheng, Xinhua	1045 (C01, Mon)	Zillinger, James	1075 (C01, Tue), 2555 (Z01, Tue)
Zhang, Yong	959 (B08, Sun)	Zheng, Xueli	1609 (I02, Wed)	Zimer, Alexandro	1098 (C01, Wed)
Zhang, Yu	2184 (L02, Tue)	Zheng, Yongping	66 (A01, Mon)	Zimmerman, Michael	569 (A03, Thu)
Zhang, Yu	2219 (L02, Thu)	Zheng, Yu	752 (B03, Thu)	Ziomek-Moroz, Margaret	1066 (C01, Tue), 1067 (C01, Tue), 2422 (M01, Tue)
Zhang, Yuanya	1596 (I02, Wed)	Zhong, Weihong	415 (A03, Tue)	Ziv, Baruch	309 (A03, Mon)
Zhang, Yufeng	1726 (I04, Sun), 1790 (I04, Wed)	Zhong, Yi Nan	1431 (H01, Tue), 1432 (H01, Tue)	Zlotowicz, Agnieszka	2341 (L05, Wed)
Zhang, Yugang	2184 (L02, Tue)	Zhongli, Luo	2050 (K01, Tue)	Zmuda, Hannah	2056 (K03, Tue), 2263 (L03, Thu)
Zhang, Yun	1239 (E02, Tue)	Zhou, Biao	802 (B05, Wed)	Zoladek, Sylwia	2302 (L05, Mon), 2309 (L05, Mon), 2325 (L05, Tue), 2341 (L05, Wed)
Zhang, Yunya	1496 (H03, Tue)	Zhou, Chenhui	1168 (D01, Wed)	Zolfaghari, Sahar	1069 (C01, Tue)
Zhang, Yunzhu	2132 (L01, Tue)	Zhou, Fan	1814 (I04, Wed), 1815 (I04, Thu)	Zondlo, John	1791 (I04, Wed)
Zhang, Yuwei	1965 (I06, Tue)	Zhou, Guangmin	306 (A03, Mon)	Zorko, Milena	2168 (L02, Mon)
Zhang, Zengxing	1924 (I05, Thu)	Zhou, Hong	1418 (H01, Tue)	Zornitta, Rafael	1306 (F01, Tue)
Zhang, Zhao	1686 (I03, Wed)	Zhou, Hongyao	2365 (L06, Mon)	Zou, Feng	46 (A01, Mon)
Zhang, Zhao-Quan	857 (B06, Tue)	Zhou, Hua	2287 (L04, Tue), 2328 (L05, Tue)	Zou, Lianfeng	307 (A03, Mon), 374 (A03, Tue)
Zhang, Zhen	1444 (H01, Wed)	Zhou, Huajun	94 (A01, Mon), 530 (A03, Wed)	Zou, Ningmu	2128 (L01, Tue)
Zhang, Zhengcheng	239 (A02, Thu), 278 (A03, Sun), 461 (A03, Wed), 472 (A03, Wed), 568 (A03, Thu), 570 (A03, Thu)	Zhou, Hui	531 (A03, Wed)	Zou, Shouzhong	1253 (E02, Wed)
Zhang, Zhenggang	457 (A03, Wed)	Zhou, Jing	1726 (I04, Sun)	Zschiechrich, Lin	1164 (D01, Wed)
Zhang, Zipin	1019 (B08, Tue)	Zhou, Jun-Qing	1193 (D02, Mon)	Zubi, Tala	2566 (Z01, Tue)
Zhang, Zongliang	1294 (F01, Tue)	Zhou, Lang	2420 (M01, Tue)	Zuerch, Michael	1863 (I05, Tue)
Zhao, Bin	472 (A03, Wed)	Zhou, Lin	1093 (C01, Wed)	Zulevi, Barr	1672 (I03, Tue), 1734 (I04, Sun)
Zhao, Chonghang	316 (A03, Mon)	Zhou, Liu	2 (A01, Sun)	Zuniga, Luis	414 (A03, Tue), 550 (A03, Wed), 556 (A03, Wed)
Zhao, Dong	219 (A02, Wed)	Zhou, Meng	2329 (L05, Tue)	Zuraw, Michael	57 (A01, Mon)
Zhao, Haili	422 (A03, Tue)	Zhou, Min	390 (A03, Tue), 537 (A03, Wed)	Zurawska, Agnieszka	1307 (F01, Tue)
Zhao, Haiyan	2641 (Z03, Wed)	Zhou, Shen	827 (B05, Thu)	Zyarah, Abdullah	1380 (G01, Tue)
Zhao, Jianqing	361 (A03, Mon)			Zywitzki, Dennis	1874 (I05, Wed)
Zhao, Jianzhang	995 (B08, Mon)				

Future ECS Meetings



AiMES 2018
CANCUN, MEXICO
September 30-October 4, 2018
Moon Palace Resort



235th ECS Meeting
DALLAS, TX
May 26-May 31, 2019
Sheraton Dallas

2019



236th ECS Meeting
ATLANTA, GA
October 13-17, 2019
Hilton Atlanta

2019



237th ECS Meeting
*with the 18th International Meeting
on Chemical Sensors (IMCS 2020)*
MONTREAL, CANADA
May 10-15, 2020
Palais des congress de Montreal

2020



www.electrochem.org/meetings

The logo for ECSarXiv features a stylized representation of a classical building facade on the left, consisting of two horizontal bars above three vertical bars. To the right of this icon, the letters 'ECS' are written in a bold, sans-serif font. Below 'ECS', the word 'arXiv' is written in a large, bold, serif font. A teal-colored inverted triangle is positioned above the 'i' in 'arXiv'. A small 'TM' trademark symbol is located at the bottom right of the 'v'.

a free preprint service for electrochemistry and
solid state science and technology

Visit www.electrochem.org/ecsarxiv to learn more!



powered by OSF Preprints

Questions?

Join us for a special session about ECSarXiv:

Wednesday, 1400-1500h
3A, Washington State Convention Center

Contact ecsarxiv@electrochem.org